The Mining Journal

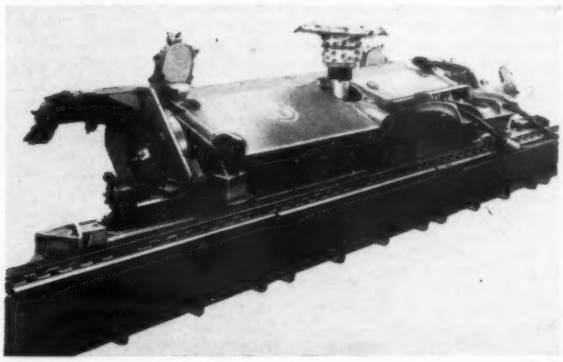
THE MINING MACHINERY EXHIBITION

OLYMPIA, LONDON — JULY, 1959

FOR the several hundred foreign visitors who will be visiting the Mining Machinery Exhibition taking place at Olympia between July 9-18 under the auspices of the Council of Underground Machinery Manufacturers, the machinery and equipment on view will speak for itself eloquently enough. In preparing this Exhibition Supplement *The Mining Journal* has, therefore, sought only to project to the great majority of its readers, who will unfortunately not have had the opportunity to visit Olympia in person, the more significant characteristics of the principal exhibits on view.

We have tried to avoid devoting undue space to detailed mechanical or electrical specifications, which are, of course, readily available from the manufacturers' own literature. Our aim has been rather to highlight the characteristics of the machine or equipment in use, stressing any new trends in design or application and also, where possible, to give some indication of promptness of delivery and of other relevant commercial data.

In conclusion, we must express our regret that the current dispute in Britain's printing industry has necessitated the production of a briefer and more condensed review of the Exhibition than that for which we had originally planned.



The A.B. Longwall Trepanner

An index to exhibitors and their stand numbers, together with page references to their exhibits in this supplement, will be found on page nineteen All enquiries should be made direct to manufacturers or to *The Mining Journal Ltd.*, 15 Wilson Street. Moorgate, London, E.C.2.

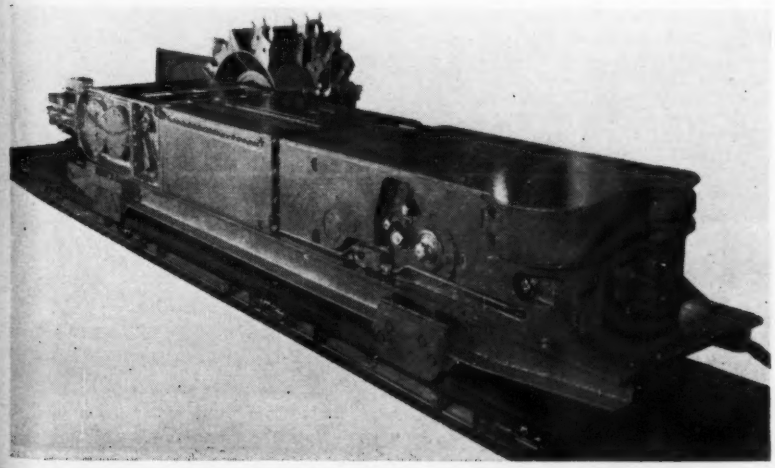
COAL CUTTERS

Anderson Boyes & Co. Ltd.

The A.B. Longwall Trepanner designed to cut and load medium thickness coal in one operation on a longwall face on the principle of continuous mining by medium-depth webs. Discharges into an armoured flexible conveyor laid to within a few inches of the coal face. The A.B. Sixteen Anderton Shearer-Loader is based on the A.B. Sixteen coal cutter and is equipped with hydraulic haulage unit and a cutting drum taking a web of 20 in. Another machine illustrates the use of an overcutting jib in association with a smaller drum than the first machine, which takes a slightly deeper web of 24 in. The A.B. Trepan Shearer, a new development in which the A.B. trepanner head is incorporated in the shearer-loader as the principal coal-getting medium while the cutting drum is retained to dress the floor and the back of the cut. The A.B. Meco-Moore Cutter Loader (produced jointly with the Mining Engineering Co. Ltd.) is a power loader, taking a deep web of up to 6 ft. 0 in.

Also shown are the A.B. Sixteen Coal Cutters, one fitted with paddle gummer and "S" Type Hydraulic Haulage. The A.B. Fifteen Coal Cutter, powered by a 70 h.p. motor shown as a flight loader ; the A.B. Fifteen Coal Cutter shown as an overcutting longwall machine fitted with hydraulic turret, and the A.B. Twelve Coal Cutter, extensively used in the thinnest seams.

Other units include the Heavy Duty Comminuting Machine, with two 125 h.p. motors, developed to cut and load in one longwall operation ; the Dreadnought Universal Arc-Shearer, Arcwall Coal Cutter and the R.D. Shortwall Coal Cutter, all for room and pillar working. Also jibs. cutting chains and various electrical equipments.



The B.J-D. 125 h.p. Anderton Shearer Loader described on next page

British Jeffrey-Diamond Ltd.

The 125 h.p. Anderton shearer loader with magnamatic transmission with power-assisted controls arranged for side operation. Has the most powerful single electric motor of any coalface machine in U.K. Motor water-cooled and the magnamatic transmission has water jacketing for heat dissipation. Claimed to be the most modern development in power-loading machinery, initial experience underground is showing 50 per cent increased productivity over earlier types of Anderton. According to seam hardness, potential cutting rate 30 f.p.m.

The orthodox shearer has been in operation some four years, but this latest development described in use three months. All British design and wholly manufactured in U.K. Available for delivery in four to five months, maintenance cost per ton is claimed as quite low. Normally shipped in packing case, this latest unit is not yet in operation overseas but will be before the end of the year. The 75 h.p. and 80 h.p. machines of the same type already are successfully operating in European countries.

The new 125 h.p. machine is particularly applicable where coal mining conditions are similar to those of U.K. and where longwall working is in operation. The loader can be operated by any orthodox coal cutter operator.

Also displayed is the Trepan shearer, a development of the orthodox Anderton shearer loader with the addition of a trepan head working forward of the magnamatic unit on the face side. A new development, of British design and wholly manufactured in U.K. Reasonable cost per ton maintenance is anticipated. Delivery is made in packing case after approximately six months. Not yet exported, application in coal mining where conditions are generally similar to those of Britain and where longwall working is in operation.

Four variations of the Ace coal cutter are shown. This was first developed in 1937 and has been continually improved. British designed and manufactured. The 80 h.p. trepan shearer, the 80 h.p. Ace and the magnamatic transmission are in operation on the stand.

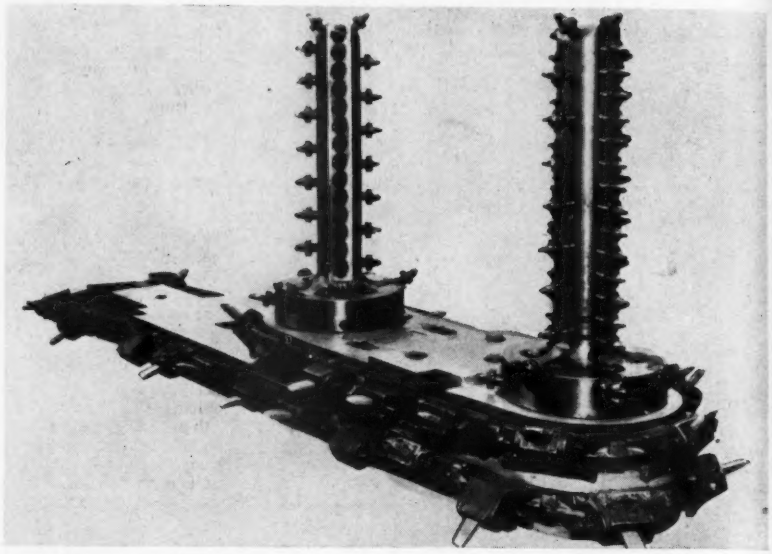
Dollery and Palmer Ltd.

Westfalia Anbau Hobel. Unit consists of armoured chain conveyor with plough attachment. Plough is guided by guide tubes bolted on face side of conveyor and is pulled along face, stripping off coal from the solid. Separate air or electric drives fitted to conveyor and plough unit. Intermediate drives arranged in case of faulted conditions. On market five years in present form. Of German design, but the main unit is of British manufacture. Delivery varies—approx. eight weeks. Precluded from no country, unit serving in most Continental countries and U.S.A. Sixty employed in Britain. Training facilities exist on the Continent and in U.K., with spares and servicing available most Continental countries and U.S.A. Can be operated by unskilled labour after brief training.

Edibrac Ltd.

New double turret parallel coal-cutting jib for cutting in thin seams. Machine consists of an orthodox flat jib with a parallel jib placed over approximately half its length from the toe end, the unit carrying two vertical turrets. The drive for the turrets is effected via a special patented bearing and sprocket. The jib length can be made to suit individual requirements and the height of the turrets to suit seam conditions. The advantages of the double turret jib over the conventional flat jib and the triangular turret jib were strikingly illustrated during a series of trials held recently at a colliery in the East Midlands Division of the N.C.B.

A standard coal-cutting jib also shown. Also Centurion range of coal-drilling bits and coal-cutter picks made from special alloy steels and tipped with Edibrac tungsten carbide. Other exhibits include ground anchors and drilling augers.



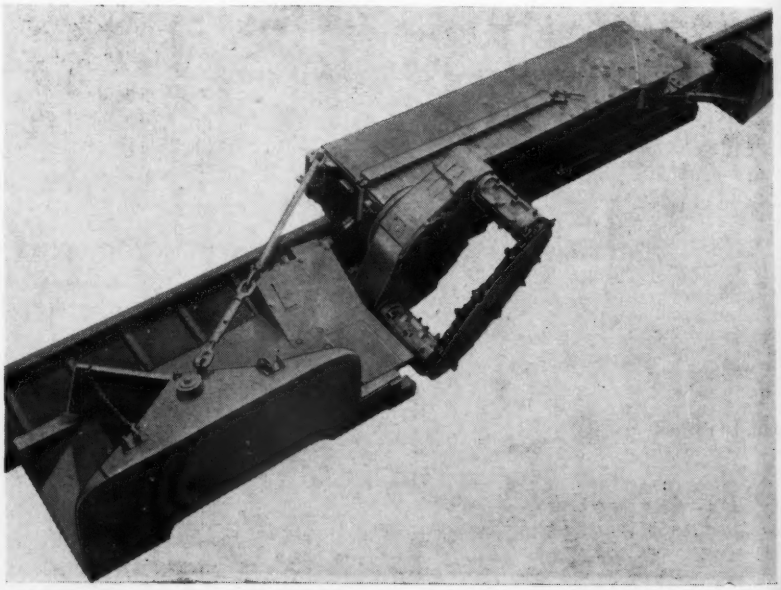
Double turret parallel coal cutting jib for cutting thin seams exhibited by Edibrac Ltd.

Austin Hoy & Co. Ltd.

Range of coal-cutter chains and ancillary equipment manufactured. Ace twin-jib coal cutter, lent by British Jeffrey-Diamond Ltd., mounted on a section of armoured conveyor. To the undercutting section of this coal cutter is fitted a Swan Neck hinged bracket and flat standardization jib, demonstrating how the ball-joint Magnacut flexible coal-cutter chain is capable of cutting at floor level from a machine mounted six inches above the conveyor. Adjacent is another Swan Neck—a Hoy 8¼ in. mechanical lift hinged bracket with flat standardization jib and Magnacut ball-joint chain. The third Swan Neck bracket on show is a fixed one with 6 in. lift; this also carries a flat standardization jib but shows the Multicut ball-joint coal-cutter chain.

Three reversible pick coal-cutter chains on a Hoy triple jib, underslung Hoy double jib shows alternative short-pitch chains, the Super Kerf, the upper of which drives a ten-tooth outboard sprocket, and curved jib fitted with Multicut ball-joint chain,

The Muschamp Coal Winner



shows how, in addition to a normal under or overcut, a flexible chain can be used to shear the back of the cut and thus ensure a straight wall.

A recent development in cutting equipment is the thin kerf unit, shown for the first time. Whereby it is possible to reduce to 3½ in. or even 3 in. the width of kerf which must be cut. As a result, particularly in thin seams or when pre-cutting, a greater percentage of production with a T.K. Unit is in the form of large coal. Where undercutting and back-shearing is required, an alternative to the curved jib is the Hoy capstan jib. Special chains developed for the Joy-Sullivan Gloster Getter, the Joy Continuous Miner, Dosco Miner, Marietta Miner, etc. Sample lengths on show. With them are the components used for Hoy ball-joint, hinge pin and D-section chain joints and various types of setscrews including the Hoy V.P. (Vibration Proof). The general range of products is completed by the display of Hoy multi-tooth drive sprockets of various types.

Resulting from successful trials of the prototype the N.C.B. has granted permission for the display of the "Mawco" cutter loader for which the cutting unit, consisting of drive sprocket, frame jib, special flexible chain and breaker bar, was designed and produced by Austin Hoy in collaboration with the mechanization department of No. 1 Area, East Midlands Division.

Joy-Sullivan Ltd.

New to market is the double ended miner, a high-capacity electric cutter loader for longwall faces. Suitable for seams between 3 ft. - 5 ft. thick with 5 ft. web. Cutting rate up to 4½ ft. per min. Length 18 ft. 6 in. width 6 ft. 6 in. and height 3 ft. - 5 ft. Weighs 33,000 lbs. British design and manufacture available boxed for delivery in six to nine months. Depreciation and the maintenance cost about 25 per cent p.a. General selling licence exists save for North America. Skilled operatives desirable, training facilities existing in U.K. only.

Also shown is I.C.M. 4A continuous miner. On market four years, of Joy Manufacturing Co. design, 10 per cent of parts being imported from U.S.A., rest manufactured in Britain. Assembly is British.

Both machines shown operating.

Mavor and Coulson Ltd.

Shown is the 90 h.p. Hydraulic Haulage Samson Cutter. New and not previously exhibited in U.K. Test rig and gauges demonstrate flexibility of unit. Height 17 in., width 26 in., length 8ft. 6 in.

Mining Engineering Co. Ltd.

Power loader. Seen in operation A.B. Meco-Moore cutter loader with picked drum.

N. J. Muschamp & Co. Ltd.

New mining machine Muschamp Coal Winner consists essentially of a conversion unit for Anderton Shearer machines, and is designed to produce as cheaply as possible a reasonable percentage of large coal. Object achieved by cutting at both the top and the bottom of the seam with rotating drums of comparatively small diameter and simultaneously shearing the back of the cut with a narrow-kerf jib and chain. Production of fines thus confined to the actual cutting areas and the main section of the seam is extracted untouched by the cutter picks. The coal is delivered at the rear of the machine on to a loading plough and thence on to the armoured scraper-chain conveyor on which the complete machine is mounted and on which it traverses the face. British designed and manufactured the Coal Winner will be available for delivery in the near future and is precluded from no countries by existing sales or other agreements.

Also shown are the complete range of Muschamp sintered carbide tipped picks, two safety chocks, special jibs, slide bar heads, reconditioned jibs and chains, etc.

Padley and Venables Ltd.

Steel and tungsten carbide tipped coal-cutter picks for all types of machines. including disc shearer. Picks of patented design.

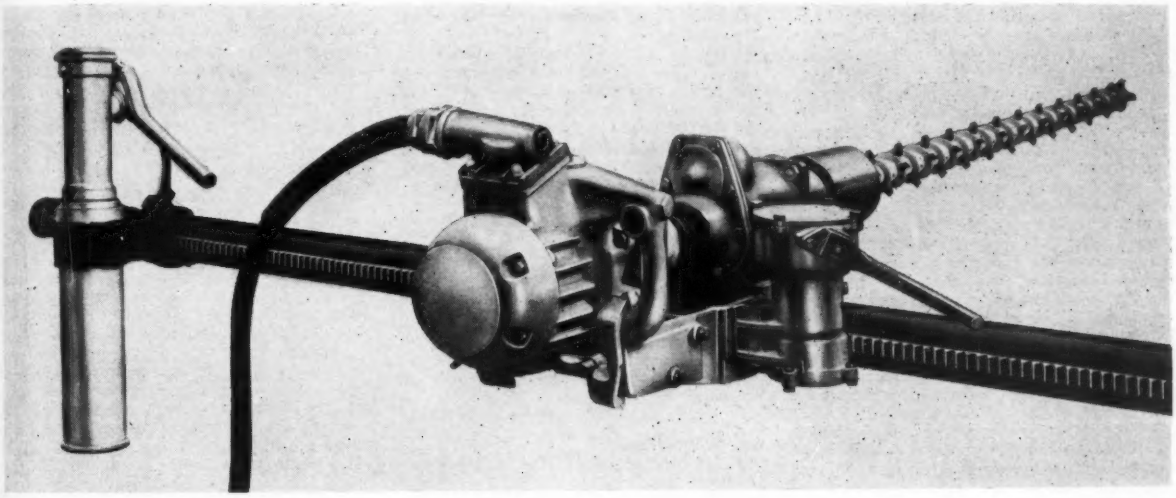
Siemens-Schuckert (Great Britain) Ltd.

50 h.p. flameproof contactor reversing panel used in designs of coal ploughs.

Siskol Machines Ltd.

Electro-hydraulic coal cutter. Rotary-percussive column mounted for confined spaces and development work. Approximately 15 cwt. Power 5 h.p. flameproof motor. Control rotary pilot and isolating switch. Flexible shaft-drilling attachment for drilling of blast holes after cutting. New British design, in production before end 1959. Price £1,000 f.o.b. British ports. Annual expenditure on maintenance, etc. less than 5 per cent purchase price. Earlier models in Canada, India, South Africa, New Zealand, Yugoslavia, Poland, Turkey, Egypt. Spares in Canada, South Africa. Specific applications in coalmining and for cutting harder materials in like circumstances.

Pneumatic radial-percussive cutting machines. Coal or rock. Three sizes. Mounted for horizontal, vertical, or underfoot cut. Narrow channel (3 in. wide) up to 15 ft. - 18 ft. Original design German but British for 40 years and manufactured in U.K. Delivery 1-3 months at £300 (simple cutter) to £1,200 (complex units) f.o.b. British ports. Annual expenditure approximately 5 per cent. Working in India, New Zealand, Poland, Turkey, Yugoslavia, Japan, Malta, South Africa, in coal mines with gassy conditions, etc. Outside coal, in quarries, etc. to eliminate overbreak or where explosives not used. Mounting range being extended. Company plans development of fourth type in range of cutting units—to make cutting of very hard rocks possible.



The Victor portable coal saw

Victor Products (Wallsend) Ltd.

Portable coal cutter or saw, for steeply inclined seams. A new unit and shown working. Equipment comprises traversing tube, mounting carriage, reciprocator unit, cutter bar with 60 tungsten tipped picks and star cutter, traversing gear unit, 4 in. dia. pilot reamer bit with drill rod, double clamps. In operation, traversing tube is erected to suit existing conditions.

The mounting carriage is first slid on to the traversing tube and the tube mounted in either of two methods at a distance back from the coalface of 15 in. A 4 in. diameter hole is then drilled using the drill rod, bit, and drilling machine to a depth of 4 ft. 6 in. with the hole centre 4 in. above the traversing tube. The mounting carriage is then moved along the tube to a position immediately in front of the drilled hole. The cutter bar, with its 60 picks and star cutter, is inserted in the hole and the reciprocator unit located in the mounting carriage and secured in

position by means of the single wing bolt fixing. The drilling machine is next mounted on the carriage. Cutting by operating the drill and applying pressure to the crank handle of the traversing gear unit.

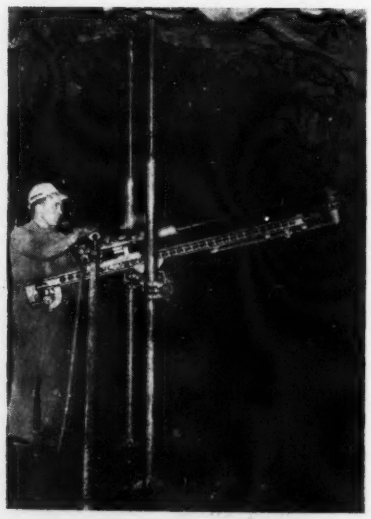
Hugh Wood and Co. Ltd.
Largest exhibit devoted to the Huwood Slicer and associated equipment viz. flexible conveyor and T.C.R. props.
New Huwood loader shown fitted with hydraulic means of propulsion.

LOADING

Atlas Copco (Great Britain) Ltd.
T2GH autoloader, recently introduced to the U.K., an overthrowing type of shovel loader mounted on a rubber tyred dump wagon. All equipments displayed are of Swedish design and manufacture.

Aveling Barford Ltd.
Type S.A. 4½ cu. yd. shuttle dumper. On market since 1945 in its present form and available for immediate delivery. Shipped on wheels protected. This British designed and manufactered unit has alternative engines available. Dorman 4LB 66 b.h.p. (one hr. rating), 4 cylinder, 4 cycle water-cooled diesel. Governed at max. 2,000 r.p.m. Perkins L4 62.5 b.h.p. (one hr. rating), 4 cylinder, 4 cycle, water-cooled diesel. Governed at max. 2,000 r.p.m. Fitted with specially re-inforced rock body permitting loading in minimum headroom. To descend shaft body supplied in two parts for re-assembly. Precluded from no country by existing agreements, dumper serving in majority of countries where mining is carried out, particularly Commonwealth. Spares, servicing and training facilities are world wide save behind Iron Curtain. Can be operated by unskilled labour after instruction.
Calfdozer. Fitted with either hydraulic or mechanical blade hoist. 12 b.h.p. diesel industrial engine, 4-stroke cycle, medium speed, air-cooled. Governor and air-cleaner. On market since 1946, of U.K. design and manufacture, it is available for immediate delivery and is shipped on tracks unprotected, on tracks protected, or in cases. Exclusively used in Finland and Sweden on stevedoring work and throughout Commonwealth and Continent on general light dozing work. Used in France in mining and tunnelling. Available for sale in all countries, training, spares and servicing facilities exist everywhere save Iron Curtain countries. Can be operated by unskilled labour after training.

The Bison rock drill by Atlas Copco



Brush Electrical Engineering Co. Ltd.
Flameproof squirrel cage motor, 12 h.p. for Eimco Rockershovel. On market two years, of British design and manufacture, the unit now available at £255 f.o.b. British ports. Depreciation and maintenance at about 5 per cent per annum. Many motors operating overseas, but spares and servicing exist in U.K. only. Good for all coalmining and in quarries, etc.

Eimco (Great Britain) Ltd.
Shown in U.K. for first time, the Model 635 low headroom loader, the Model 622 compressed-air powered Rockershovel fitted with 32 cu. ft. capacity hopper. The Model 635, crawler mounted machine, is available with a minimum headroom requirement of only 5 ft. Loading capacity varies from 50 to 100 cu. f.p.m. Model 622 is now available with a 32 cu. ft. capacity hopper mounted at the rear of the machine.
Also standard versions of Model 12B and 21 Rockershovels each equipped with the Eimco air-operated automatic coupler for coupling tubs or mine cars to the loader. An example of the coupler shown separately. Model 40W Rockershovel. Compressed-air powered tugger hoists and compressed-air powered geared reducers.

Holman Brothers Ltd.
On show are scrapehaulers. The S.G. 30 three-drum haulage (electric) and H.E.A. two-drum haulage (air).

Austin Hopkinson and Co. Ltd.
Pikrose equipments. Scraper hoists. Models S 1, S 2A, fabricated all-steel scraper.

Joy-Sullivan Ltd.
C.221 electric 50-75 h.p. double-drum slusher. Rope speeds 250-315 f.p.m. with normal rope pulls of 5,000-10,000 lbs. British designed and manufactured, on the market for two years at £1,645 (60 h.p.) f.o.b. British ports. Annual expenditure on depreciation and maintenance 15 per cent. Already serving in South Africa, Australia, France, Germany, Norway and Spain. Can be operated by unskilled labour after brief training. Also two years on market and of British design and manufacture is R231 double-drum slusher. Largest of range. May be powered with 100 h.p., 125 h.p. or 150 h.p. electric motors giving normal rope pulls between 11,000-16,500 lb. Delivery in six months at budget price f.o.b. U.K. ports £3,455 (100 h.p. model). Depreciation and maintenance is estimated at 15 per cent per annum. Operating in Greece, India, Siam, South Africa, U.S.A., France, Spain. Used for scraping in quarries or stockpiling. Spares, servicing and training can be supplied as needed. Shown also (in operation) is 12-BU Joyloader. On market four years and of British manufacture. Loads at between 1-1½ tons per min. Available for delivery three months at £6.930 f.o.b. British ports. Maintenance and depreciation expenditure approximately 25 per cent p.a. Also shown are British-manufactured N-221. D-113 slushers. All these equipments have general overseas selling licence save in North American continent.

Mavor and Coulson Ltd.
Shown is a Samson loader MC3 connected by a bridge conveyor 35 ft. long to a short piece of gate conveyor. The bridge conveyor forms a new means of taking away what is gathered by the Samson loader and delivering it continuously to a conveyor on the floor. The loader has a short jib which can be raised or lowered hydraulically but does not need to be slewed and is therefore made rigid sideways. Bridge conveyor is running and the loader moves about 1 yd. to and fro on a curved path. In separate transmission gear case is the gearing of the Samson loader, seen turning slowly.

Mining Engineering Co. Ltd.
Stage loader 650 mm. 5 in. heavy armoured 22½ h.p. mobile stage loader of new design. Shown working. Power loader A.B. Meco-Moore cutter loader with picked drum.

SHAFT SINKING EQUIPMENT

The Cementation Co. Ltd.
Models illustrating processes involved in Cementation shaft sinking. Equipment shown ranges from steel false work tubbing to ventilation tubing. Photographs depict tunnelling operations. An exhibit of coring and drilling equipment is included by arrangement with John Thom Ltd., a member of The Cementation Group.

DRILLS

Atlas Copco (Great Britain) Ltd.
Shown for the first time in U.K. is the Bison - BBC52—a new rock drill for long hole drilling operations in coal mines, e.g. methane drainage. The 140 lb. Bison is a 4¾ in. drifter, designed for use in conjunction with a wagon drill or screw feed underground. Extension drill steels of 1¼ in. and 1½ in. diameter should be used.
The Tiger rock drill, another exhibit, weighs 60 lb., and is designed for high-speed drifting and stoping operations. The Tiger is mounted on the BMT50 retractable leg. Also displayed is the pusher leg-mounted CBH11 rotary coal drill and the BBD46WR8 and roof bolter.
All equipments of Swedish design and manufacture.

The Consolidated Pneumatic Tool Co. Ltd.
Tornado 503 fast tunnel drill. Introduced 1958. Mounted on new lightweight feedleg. Also shown with Hemborn dust extractor. Four other sizes of drill. CP55 diamond drill. FI. 18 wet pick.

Dollery and Palmer Ltd.
Hausherr large hole rotary-percussive drilling machine Type DK9/68-S on show. Compressed-air operated and suitable for drilling holes 3½ in. to 4½ in. dia. at any desired angle. Various types of mountings to suit local quarry conditions. Rotary percussive action enabling hardest rocks to be drilled economically. Air supply to percussive unit can be disconnected to allow for normal rotary drilling. Designed in West Germany and imported from there at the moment. Available in approx. two months. Currently used W. Germany and in U.K. for methane drainage work, has applications in coal mining and in quarrying where exceptionally hard rock conditions exist. Spares, servicing and training facilities exist in West Germany and the U.K. It can be operated by unskilled labour after brief training. Drilling machine Type DP21.

Hardypick Ltd.

On display the newly-developed Hardy water-controlled hammer drills. These designed so that the compressed air supply inside the machine is cut off if the water for dust allaying fails to flow. The design is such that there is no mechanical lock in operating the air supply inside the machine, but is dependent entirely on water flow pressure. This arrangement used on the Indomitable (48 lb. weight) and the 60 Pounder (60 lb. weight) hammer drills. Operated in coal mines, quarries, and certain classes of metalliferous mines. Delivery, in wooden cases, can be made in four to six weeks at a budget price f.o.b. British ports of £80 - £100. Expenditure on depreciation and maintenance is estimated at 25 per cent per annum. Spares and servicing facilities exist in Australia and India, and in other countries when required. The drills may be operated where some skilled labour is available or by unskilled labour after training. They are precluded from no country.

Simplex B6B, Simplex RV and B6 water-controlled hammer drills also on display, as are the rotaries 4/P with integral water pump and HL1 with integral hydraulic leg.

Eighteen months on the market is the Type 4 electric mining drill with integral water pump passed by the Ministry of Power for FLP Certificate. Incorporates a pump which draws up water from an open vessel and forces the water under pressure along the hollow drill rods, forcing the cuttings out of the hole. Water can be varied from 2-8 pints per min., which allows shales to be sludged out or hard cuttings floated out of the borehole. Equipment is for drilling material suitable for rotary boring. Available for delivery ex-stocks at a budget price of £80 f.o.b. British ports. Considered annual average rate of expenditure on depreciation and maintenance is 25 per cent small portable machinery. The Type 4 is not yet introduced abroad. For use in coal mines or for operation in materials suitable for rotary drilling, it is not precluded from any country, nor do facilities exist for training mining personnel in its use. Also on show is the compressed-air rotary drill RAD 1. Water-controlled air picks also shown. Water-flow control again a feature. Recently developed and available four to six weeks at budget price £35 0s. 0d. f.o.b. British ports. Maintenance and expenditure about 25 per cent, p.a. Used in coal-mining and quarrying, the equipments have not yet been offered abroad. They are precluded from no country.

All these equipments are of completely British design and manufacture.

Holman Brothers Ltd.

Wide range of drills exhibited. Handrils, Silver Eight, SL9D, RV237, Silver Bullet, Silver Thirty. HC300. Also Silver Three on airleg and HC300 developer.

HC300 Handril is three months on market. Wet model weighs 78 lb., dry 76 lb. Length with retainer 25¾ in. Motivation by compressed air. Available for delivery in two months, wet model costs £132 f.o.b. British ports. Annual expenditure on maintenance and depreciation estimated at 20 per cent. Shipped cased. Holman world-wide organization offers spares, servicing and operative training. Drill is precluded from no country by existing agreements. Particularly suited to shaft sinking, drill may be mounted on a variety of supporting rigs. Primarily intended as hand-held, can be adapted for airleg mounting or can be cradle mounted as light drifter.

Also shown, Integram Silver Three on airleg, Dryductor on Stoperleg, 16A drifter for ring drilling, Silver Three stoper. Dryductor drill as sampler, for accurate sampling behind rockface surface. Precluded from no country by existing agreements. Also dry and autolock wet types of pneumatic picks, pneumatic and electric rotary coal drills.

Crawler Drilrig. Eimco 622 crawler mounting twin-hydraulically operated booms, each boom fitted with cradle-mounted drill. On market two years, is available in 10-12 weeks, shipped unpacked —collapsed. Annual depreciation and maintenance approximately 2 per cent. All these equipments of British design and manufacture. Spares, servicing and personnel training facilities through Holman world-wide organization.

Joy-Sullivan Ltd.

On display is 12-B core drill, first marketed eight years ago. U.K. manufacture. Available for delivery in two to three months at £1,750 (diesel) f.o.b. U.K. ports. Annual maintenance and depreciation expenditure approximates 20 per cent. Selling licence applies with exception North America.

Siskol Machines Ltd.

Pneumatic rotary drill. Light weight (27 lb.) hand held blasthole. One type for wet, one for dry. Holes up to 2½ in. dia. Original design German. U.K. manufacture. Dry drill (20 years on market) £45 and wet (five years market) £55 f.o.b. British ports. Work in U.S.S.R., New Zealand, Turkey. Also Peda petrol (or diesel) drilling unit. Rotary for similar diameters. Flexible shaft is 14 ft. long. On market four years of British design and manufacture. Two months delivery at £325 (petrol) and £400 (diesel) f.o.b. British ports. In both cases annual expenditure less than 5 per cent purchase price including consumable spares. Application in quarries and opencast operations.

Victor Products (Wallsend) Ltd.

Comprehensive range of mining equipment. Chief interest centres on drilling, by rotary means, air or electric, holes in coal and associated stone for explosives, coal breakers, methane drainage, water infusion, exploration, etc.

The 50 cycle equipment supplied in hand-held or power-feed type; either direct operation from electric supply or remote operation from flameproof control panel to operate one drill as in the midget design, or capable of taking two drills at one time.

The 150 cycle equipment offers advantages, the machine smaller and lighter due to 9,000 r.p.m. motor. Equivalent drilling performance. The 150 cycle drill is controlled from a similar control panel except that the incoming electric supply is not only reduced to 110 v. for the drill, but the frequency, normally 50 cycles, is increased to 150 cycles by a simple frequency changer.

Frictional sparking hazard with light alloys on drilling machines has been eliminated by the introduction of the new flameproof coal drill designed specifically to eliminate the hazards of using conventional drill case materials. Has all external parts, including the fan, made from ferrous material, containing no aluminium, magnesium, etc.

150 cycle steel coal drill Mark 2 has been on the market three months and is British designed and manufactured. It is available immediately at a budget price f.o.b. British ports of £67. Depreciation and maintenance per annum might cost 20 per cent. Useful in thin coal seams and in metalliferous mining for all materials that

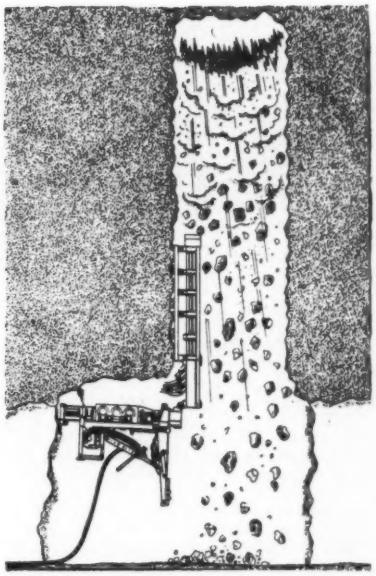


Diagram of the Ace-Alimak portable climbing drilling platform in the blast

can be drilled by rotary means. Precluded from no country by existing agreements, it can be operated by unskilled labour after brief training, facilities for instruction existing in practically all major mining areas. Mark 2 has been developed specifically to give robustness and freedom from frictional sparking hazard. Drill shown working.

Hugh Wood and Co. Ltd.

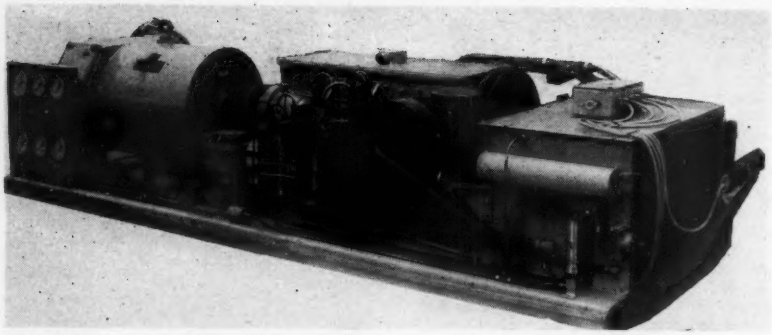
HCS/N4 electric drill and the compressed-air rotary drill together with the ancillary equipment common to both. HC53 hammer drill shown in conjunction with an airleg. Pneumatic picks.

DRILLING COMPONENTS AND ACCESSORIES

A.C.E. Machinery Ltd.

Portable climbing drilling platform manufactured by Alimak and imported into the U.K. under licence by A.C.E. Machinery Ltd. Overseas sales of the new equipment are handled direct by Alimak save for those in the U.K. and the British Commonwealth, which are completed through the usual A.C.E. channels. Basically the Ace/Alimak equipment consists of an all-steel platform driven by compressed air at 80/100 lbs. pressure to climb a rack-equipped guide rail. All services are carried in the rail sections—air and water for drilling —ventilation and firing cable. The platform is equipped to carry all necessary drilling tools.

The equipment is equally suitable for vertical and inclined shafts, and special curved rail sections are available for use where the raise changes direction, or for S-type shafts. Safety measures include a telephone communication between the working platform and the tunnel floor. The platform can also be lowered by turning a hand crank, should the air supply be cut off. The platform is equipped with a tool box, special climbing irons, a grappling hook, and a lifeline. With the help of the equipment the driller may climb down to the tunnel floor along the guide rails if the compressed air supply should fail or the hand crank not operate. Platform has a climbing speed of 33 ft./min., a



The Armstrong Airbreaker six-stage compressor (12,000 p.s.i.) shown by Olin Mathieson Ltd.

lowering speed of 50 ft./min. and its lifting height is claimed as being "practically unlimited". Maximum load is approximately 1,100 lb. and minimum shaft area for operations is 6 ft. 8 in. by 6 ft. 8 in.

Atlas Copco (Great Britain) Ltd.
Coromant integral drill steels, Coromant extension equipment, detachable bits. All of Swedish design and manufacture.

The Cementation Co. Ltd.
An exhibit of coring and drilling equipment included by arrangement with John Thom Ltd. a member of The Cementation Group.

Holman Brothers Ltd.
Pneumatic drill steel puller Holbits. TC tipped drill steels.

Padley and Venables Ltd.
Drill rods, tungsten carbide tipped drill stems, tungsten carbide tipped and all-steel detachable bits for percussive and rotary drilling. New Spearhead tungsten carbide tipped rock bit, allows discarded stocks of worn or broken stems to be brought back into use. Rotaflo wet drilling attachment for use with standard rotary-dry drilling machines.

Victor Products (Wallsend) Ltd.
Drill gate end boxes shown working. Control panels for 150 cycle or 50 cycle drills. Flameproof top busbars. Overload, single phase, short circuit and earth leakage protection. Quick access cover. A new product, of British design and manufacture, this is available from 6 - 8 weeks at £300 f.o.b. British ports. Annual maintenance costs approximately 8 per cent. A new product, service facilities will be built up as equipment is supplied to overseas markets, but the equipment is precluded from no country because of existing agreements, while operation can be by unskilled labour after brief training and training facilities exist in all major mining areas. Equipment useful for all materials that can be drilled by rotary means, including asbestos, gypsum, some copper and iron ores, phosphates, etc. Panels are built to BS dimensions to enable all boxes to be coupled together to form one unit.

Wide range of ancillary and other equipment on display.

Hugh Wood & Co. Ltd.
Water infusion equipment. Water infusion tubes shown in conjunction with a type V pump. The SDP/2 drill panel made to N.C.B. specification. Portable DP/3 panel for overseas use.

LARGE HOLE BORERS

Export and Technical Services Ltd.
Bringing to notice tunnelling machines and ventilation or staple shaft borers. No machines displayed. Exhibits consist of enlarged photographs of "as driven" tunnels and staple shafts. New West German design and manufacture by Bade Machinery Co. British agents E.T.S. have licence to manufacture in U.K. and to sell in U.K., Commonwealth and U.S.A.

Tunnelling machine, Model SVM 33, has cross section approx. 10 sq. m. (107.6 sq. ft.). Essential parts are cutting heads in three cutting zones, the side cutters (one on each side), the drive comprising reduction gear, electric motors and hydraulic propulsion equipment, the undercarriage, the conveyor-mounted spoil scraper and complementary spoil conveyor. In operation, the positioning equipment on each side is hydraulically jacked against side walls, the leading end of the machine is then thrust forward by pistons housed in two separately controlled propulsion cylinders. When the pistons are fully extended the positioning equipment on each side is retracted and the rear part of machine pulled forward. Cycle repeated. Machine can drive tunnels upwards or downwards at 22 deg. max., achieved by adjustment of undercarriage wheels. Four-man crew required. Advance from 8 yd. to 10 yd. per 5½ hr. work. In comparatively soft strata capable of 3½ yd. per hr. In strata of 2.6 sp.gr. can produce 260 - 300 tons per shift. Primarily designed for tunnel and staple shaft driving, could be used for iron ore mining by bord and pillar. Machine has been working in potash and ironstone mines in Germany.

Other similar type machines equipped with roller cutter and giving 4 metre dia. excavation are under construction. One has been ordered and financed by the European Coal and Steel Community and is destined for service in France. Also featured is vertical staple shaft borer capable of 9 ft. max. dia. excavation. A secure fix to sidewalls permits upward thrust supplied by newly designed propulsion cylinder pistons. The machine is at present operating in an iron ore mine in Germany. In operation rope winch on higher level raises borer through pilot hole (approx. 6 in. dia.) in style of N. Rhodesian cage-raising system. Spoil drops to the lower level for mucking.

Both machines have driven through Ruhr sandstone, potash, anhydrite and a durable host rock with quartz enclosures found in iron ore mines.

Underground lateral road cut by S.V.M. 33 (Export and Technical Services Ltd.)

AIR COMPRESSORS AND ACCESSORIES

Brush Electrical Engineering Co. Ltd.
Overhung synchronous motor S50/40, 400 h.p., 375 r.p.m. Rotor designed for direct mounting on shaft of driven machine without bearings. Generally used for compressor drives. British design and manufacture, available immediately at £2,900 f.o.b. U.K. ports. Annual expenditure on depreciation and maintenance about 2½ per cent. Operating in Australia, Britain, United States, Canada. Applicable any type mining. World wide spares, servicing and training facilities exist. Precluded from no country by existing agreements. Also 35 h.p. motor, stator and rotor.

The Consolidated Pneumatic Tool Co. Ltd.
160 c.f.m. Power Vane stationary air compressor. New unit.

Holman Brothers Ltd.
ATH8S skid mounted electric direct coupled set, T60R with V-belt pulley, protective control equipment for compressors, AG500 aftercooler. Rotomotors and V-engines.

BLASTING

Olin Mathieson Ltd.
Demonstration shells for coal breaking and compressor. The Armstrong Air-breaker is used with either the longwall or pillar and stall system of mining. It produces a high percentage of large coal with a corresponding reduction in fines, eliminates the hazard of firedamp ignition and is not subject to the restrictions of the Coal Mines (Explosives) Order. Between 200 and 350 blasts per shift can be discharged according to the actual firing time available. Also pipeline and thermal protection equipment.

Siskol Machines Ltd.
Water infusion sealing tubes, pump for water infusion type 5E, pump unit for water infusion type 4A. All of U.K. design and manufacture. Type 4A mobile pump on market 3 years, pressures up to 2,250 p.s.i. with flow 10 g.p.m. Delivery 3 - 4 months at £1,200 f.o.b. British ports. Used in U.S.S.R., China, France. Type 5E designed this year, available 3 - 4 months from autumn. This is Tangye Hydraflo (patents pending) on chassis. Output 1,000 g.p.h. at 1,500 p.s.i. or 500 g.p.h. at 3,000 p.s.i. All British. Price £1,800 f.o.b. British ports. Main application water infusion coal. Overseas sales by agreement between Siskol and Tangye Ltd.

Ward's Flexible Rod Co. Ltd.
The "Nucana" blasthole charging rod is shown. Used wherever deep drilling customary. Rods are constructed with a tempered steel core on which are assembled laminated hardwood discs, bonded under pressure with synthetic resin. End-grain surface of the discs eliminates any possibility of splitting and ensures long life. Rods available in two diameters; 1 in. for blasthole charging and ½ in. for blasthole measuring. Standard lengths 3 ft., 4 ft., 5 ft., 6 ft. On the market for 10 years, these British products are delivered promptly. They have a claimed life of from 5 - 8 times that of cane rods. Used in South Africa, Central African Federation, West and East Africa, and Australia.

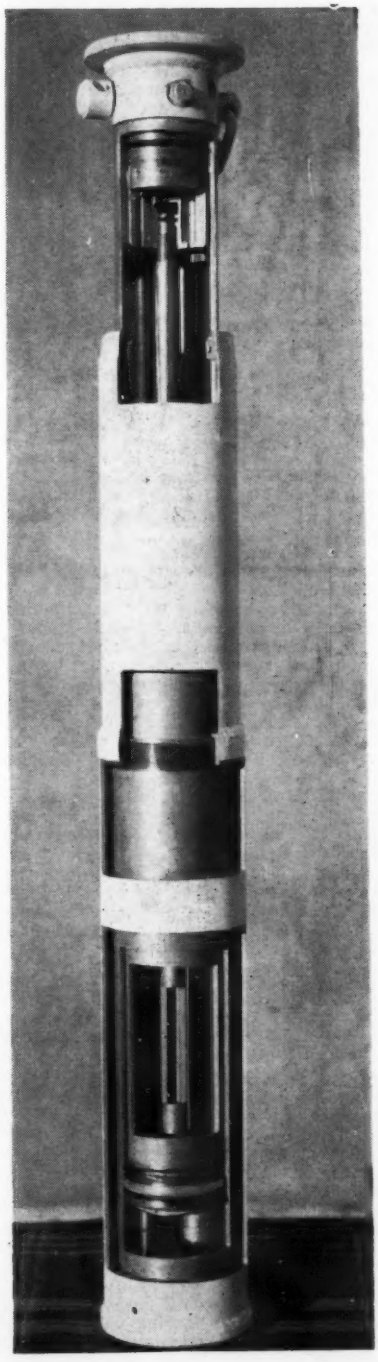
SUPPORT

Acrow (Engineers) Ltd.
Display of hydraulic pit props.

B.R.D. Co. Ltd.
Has taken over sole manufacturing and selling rights of the Polar hydraulic Fielding pit prop. This full range shown. The Polar is designed for rapid and economical maintenance. Easily serviced, and once installed expenditure, depreciation and maintenance negligible. Standard head unit fits all prop sizes and houses all valves and controls and can be replaced *in situ*. A new product, of British design and manufacture, the prop is available for immediate delivery. U.K. prices range from £11 13s. 6d. for Model 2620 to £17 2s. 0d. for Model 9671. Twenty-nine sizes are available to support working faces of 26 in. to 96 in. Smallest 20 in. closed 26 in. extended, and largest 71 in. closed 96 in. extended. The quick change head cuts service time at the face to 3 mins. and keeps prop installation at full strength. Stroke required on pump handle ensures quick, easy setting in confined conditions. External dia. 4¼ in. Setting load is 7 tons and yielding load 20 tons, both factory set.

A new product only recently on U.K. market, servicing facilities will be available to customers anywhere. Precluded from no country because of licensing or other sales agreements, the Polar can be operated by unskilled labour after brief training and the training of overseas personnel in its use can be arranged in any part of the world. Used in any mining establishment where the problems of roof support and strata control are important, an increased range of extensions, cap fittings and bases is planned, while intensive research on corrosion and erosion of mining equipment may result in improved performance and more intensive utilization.

B.R.D.'s Polar hydraulic prop



Catalin Ltd.
Caps for hydraulic and friction pit props. Made from processed fibre material bonded with synthetic resin, the caps are claimed to combine toughness with resilience. Continuing research by manufacturers has led to the development of varying grades of caps for specific needs. Fixed friction caps are forwarded as enabling props to be set more quickly and with less fatigue, preventing steel to steel contact between roof bar and prop, and reducing the risk of slip.

W. E. & F. Dobson Ltd.
Examples from range of hydraulic pit props together with the Dobson self advancing supports. 25-ton yield hydraulic prop. 18-ton yield hydraulic prop introduced as a lower priced prop, of lighter weight and smaller yield load. For use on conventional faces. 10-ton yield prop.

Dollery & Palmer Ltd.
GHH Link bars for mechanized longwall mining i.e. cantilever link bar roof supports designed for use on prop-free front longwall mechanized faces. Bar sections normally 80 m.m. or 100 m.m. in depth. On market 6 years or more, but design now improved on original. The unit wholly manufactured in U.K. from German design. Delivery in 2 - 3 weeks. Used longwall mechanized coal faces, is operating on the Continent.

GHH torsion prop shown. An immediate bearing friction prop clamped by portable hydraulic tensioning device. On the market 1 year and of German design, arrangements in hand for U.K. manufacture later this year. Used in level and semi-steep coal seams, unit already serves in West Germany. Spares and servicing facilities available in West Germany.

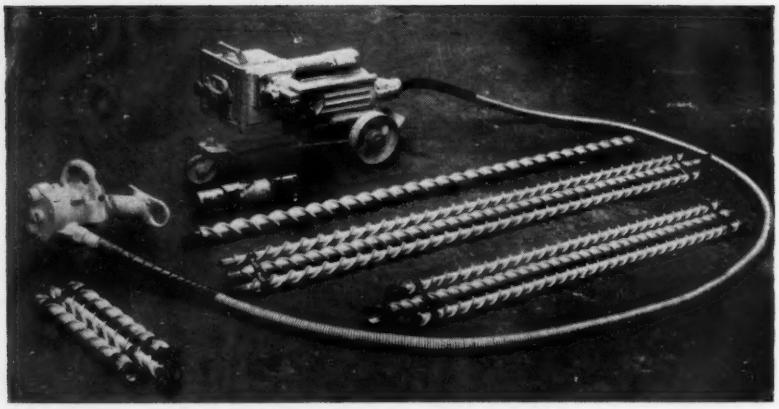
Dowty Mining Equipment Ltd.
Introduced in recent months the 50-ton chock and the recoverable strata bolt. Of special interest to overseas mining engineers, two new developments, the Dowty canopy and the Rodjo shield. Designed for use with the shortwall system. Shown publicly for the first time in the U.S.A. at the Cleveland Coal Show in May of this year.

10 ft. hydraulic prop, one of the biggest ever made, is being exhibited, specially developed by Dowty for Japanese mines. Also working model of Roofmaster self-advancing hydraulic support system.

Also exhibited examples of Dowty props made under licence in France by S.A.G.E.M. (Societe d'Applications Generales d'Electricite et de Mecanique), and in Germany by Salzgitter Maschinen AG. 100-test rig of Duke prop is exhibited.

Gullick Ltd.
The Seaman chock was originally built in 1954. Stand shows a section of face equipped with these supports, used in all divisions of N.C.B. A new development has been the installation of chocks with the fast plough for which a special ram was designed capable of operating at two pressures. Company now developing a system to operate in the very low seams and also in the very high seams, and on exhibition a chock capable of operating in 2 ft. and also a chock capable of operating at 7 ft.

A further development has been a goal post chock also shown on stand to form a mechanized intermediate support between the four-legged chocks. G.R.S. 5 support system introduced. Each individual support of the new system has a cantilever bar



The Hardy forepoling equipment

which is pre-loaded hydraulically and which can yield independent of the support legs.

The majority of these equipments are in motion.

Hardypick Ltd.

Forepoling equipment for forming slots up to 6 ft. deep in the top of a coal seam next to the roof so that steel planks can be inserted and the roof supported before cutting. The slot is made 12 in. to 15 in. deeper than the web of coal cut by the coal cutter, the steel plank inserted to the full length of slot, some 12 in. projecting over the cutter run. As soon as the cutter passes, this end is supported by a prop, the other end of the steel plank being on solid coal so giving full support to the roof. Equipment consists of an electric motor with skids having a flexible drive to a drill rod holder. The drill rods are bridled together in sets of three and fitted with tungsten carbide rotary bits. With the flexible drive any height of seam can be slotted. This equipment just developed is of complete U.K. design and manufacture. Despatched in wooden cases, it is available in 6-8 weeks at a budget price f.o.b. British ports of £200. Expenditure on maintenance and depreciation estimated at 20 per cent p.a. Useful only in coalmining, spares and servicing facilities are not yet arranged. The machine can be operated by skilled labour after training and semi-skilled labour can maintain the equipment. It can be sold in all countries.

Hickson's Timber Impregnation Co. (G.B.) Ltd.

Timber preservation and flameproofing. Vacuum-pressure impregnated timber, by the anti-fungi and -insect preservative Tanalith. This constitutes no additional fire hazard.

Manufacture of Tanalith is covered by British patent, and the preservative has been on the market for about 25 years, with recent improvements to formulation. Wholly manufactured in the U.K., delivery in most cases is immediate at a budget price of £225 per ton f.o.b. British ports. Virtually eliminating the maintenance of mine timber, Tanalith is supplied as a dry powder normally in 5 cwt. drums. Application is carried out in a vacuum-pressure impregnation plant. It is used in Great Britain, South Africa, the Central African Federation, West Africa, the United States, Malaya, Spain and Turkey, on the spot spares and servicing facilities being available in Great Britain, New Zealand, South Africa, Australia and Malaya. Tanalith is particularly suited to the treatment of permanent roadway timbers in both coal and metalliferous mines. After brief training, vacuum-pressure impregnation plants can be operated by practical personnel knowing simple arithmetic, facilities for training existing in the U.K., New Zealand, South Africa, Australia and Malaya. Improvements are the subject of continual research.

Also shown is mock-up of steel arch supported roadway with cover boards, vacuum-pressure impregnated with Pyrolith. Pyrolith widely used by N.C.B. to comply with flameproof requirements of the Mines and Quarries Act covering escape roadways.

Mastabar Mining Equipment Co. Ltd.

New on July 1, 1959, the Pathfinder hydraulic roof support. N.C.B. tests completed at Central Engineering Establishment, Bretby. Designed to give a setting load of 6 tons upwards to 10 tons. Yield valve set to operate at 25 tons load, load shedding being controlled to ¼ ton. Special features are positive pumping action, simplicity in release and controlled yield valve action. Sizes to suit varying seam heights. Annual expenditure for maintenance would be approximately 10 per cent cost. British designed and manufactured, the Pathfinder is available for delivery in 3-4 months and is packed in slotted crates. Suitable for any mining conditions where roof support is required, it can be operated by unskilled labour after brief supervision. Descriptive literature is available and no special training is required. It is precluded from no overseas countries because of licensing or other sales agreements.

Mining Engineering Co. Ltd.

Roof control equipment. Steel chock bases of new design. Chock releases of improved design.

The Rawlplug Co. Ltd.

Roof bolting system. On display shields and studs, anchoring units. The R.B. anchoring units consist of four segments made in malleable iron. The segments are tapered internally and are expanded by a suitably tapered nut which is mechanically drawn into the shield when the stud is tightened, thus forcing the castings against the walls of the hole and giving an instantaneous anchorage. Extraction is possible by using the extractor tool. The S.E. ¾ in. shield is made up of two suitably shaped malleable iron castings held together by a steel stirrup, a threaded taper nut being provided with two longitudinal slots in which the stirrup registers. The shields externally are formed with a buttress type thread. This gives an initial grip when the stud is screwed through the nut on to the end of the stirrup. Like the R.B. Units the S.E. Type can be anchored at any depth of the hole. The shell will not turn while being tightened. No loose parts.

The advantage of both types of unit described is that the depth of hole does not require the exactness called for when using other patterns of roof bolting units. All that is necessary is for the holes to be deep enough to accommodate the overall length of stud. This allows a roof bolting unit to be placed at any required depth giving the required projection beyond the face to accommodate bearer plates, bank bars, channel and angle sections, etc.

A new type of shield with interesting features—it is double-expanding—is being developed. Can be adopted for roof bolting and is on display. Also on show are Rawldrills, star drills, tubular boring drills, etc. In operation are Durium carbide tipped drills, drill hammer attachment. Other various equipments shown.

Siskol Machines Ltd.

Recoverable support bolt. Length 4 ft. Suitable for 1⅜ in. dia. holes. On market two years, of British design and manufacture, available from stock at £9 f.o.b. British ports.

Steel Props and Mining Equipment Ltd.

Units of German manufacture comprising the main products of Rheinstahl Wanheim. Union all-steel friction pit props, Union Vanwersch articulated steel roof bars. The Union Lamella L.50 chock prop is a new product. Has range of 12 sizes covering seam thicknesses of 2 ft. 0 in. up to 7 ft. 4 in. Of frictional yielding type each size has a flexibility of more than 35 per cent of the maximum length and needs no timber blocks or other packings. Shorter sizes have a resistance of upwards of 80 tons, the medium lengths 70 tons, and the longer lengths 50 tons.

Union prop withdrawing hammer, a new tool designed for withdrawing all collapsible pit props of friction type employing the locking wedge principle.

A. G. Wild & Co. Ltd.

Two new self-advancing chock units demonstrated. Gull Wing type consists of two 50 ton Desford Chocks and a double acting ram which advances each chock separately ensuring that the roof remains fully supported at all times. Goal Post type consists of two 50 ton Desford Chocks operating as one unit under a common roof bar capable of withstanding a load of 100 tons at any point, and an hydraulically operated articulated extension over the conveyor. The unit has an area of contact with the roof of 10 square feet. Static Desford Chocks also shown.

Hugh Wood & Co. Ltd.

T.C.R. prop already displayed on the slicer face (Coal Cutters). Also GT90 roof bar.

ELECTRICAL EQUIPMENT

Associated Electrical Industries Ltd.

Products of the A.E.I. Heavy Plant Division, and member companies Metropolitan-Vickers Electrical Co. Ltd. and British Thomson-Houston Co. Ltd. A.E.I. shows a flameproof magnetically-operated proximity switch, specially made for the exhibition by Heyes & Co. Ltd. of Wigan, who manufacture proximity switches for

the Company. These switches have been specially designed and tested for the control of colliery hoists, but they may prove useful in other situations where a moving part must operate a switch without making material contact with it.

Standard transwitch equipment by Metropolitan-Vickers, consists of a mining-type transformer (complying with N.C.B. Specification P.109) fitted with a Metrovick "SF" flameproof type circuit-breaker on the H.V. side, and an earth leakage current transformer on the L.V. neutral point. Underground flameproof control equipment displayed includes a flameproof contactor unit Type MCU 153, a flameproof, rotary pattern remote control switch Type MCS 6, flameproof transformer pattern drill unit Type MDU 34, flameproof 4½ RVA transformer lighting unit Type MLU 41, a prototype chassis with two 100 amp contactors for a proposed reversing unit Type MCU 100 R, and a contactor interior for converting old Type MU81 gate end boxes to comply with the latest N.C.B. specification.

British Thomson-Houston show a flameproof high voltage contactor unit Type TMC 2453-C, suitable for direct-on-line starting of high-voltage squirrel-cage induction motors driving haulages, conveyors, pumps or similar apparatus. All British design and manufacture at £1,290 f.o.b. U.K. ports.

British Insulated Callender's Cables Ltd.

Demonstrations of repairs to trailing cables, utilizing the pressure-type and copper-tape vulcanizers. Following exhibits are displayed: Cables and accessories for mines and quarries, including plastic, rubber and paper insulated cables; mineral insulated cables and accessories; cable couplers and adaptors (quarry and F.L.P. types); shaft cable cleats; claw-type cable cleating system; pressed steel mining-type straight joint box; moulded polychloroprene plugs; mining-type capacitors for power factor correction; and overhead equipment for underground haulage in mines. The display of interrupted face signalling equipment will comprise a demonstration panel.

British Nylon Spinners Ltd.

Individually screened trailing cables, conductors of which are braided with nylon.

Brush Electrical Engineering Co. Ltd.

Dry type flameproof mining transformer, 300 kVA, 3 phase, 50 cycles, 3300/565 volts, Delta/Star connected, with off-circuit tappings on the H.V. winding at minus 5 per cent and minus 10 per cent adjustable by means of links accessible through a handhole in the tank side. The transformer is equipped with an H.T. flameproof circuit breaker in accordance with the latest mining regulations and is provided with incoming and outgoing flit plugs. This complete unit is covered by a Buxton Certificate for use in Group One Atmosphere and can, if necessary, be taken right up to the coal face. Six months on market and available in 6-14 weeks at £2,350 f.o.b. British ports. No maintenance expenditure. Not yet in overseas service there are no restrictions on its sale abroad, and spares are not normally required. Should be operated by qualified electricians only. Used underground wherever certified flameproof equipment is required.

Oil filled trans-switch unit, 200 kVA 3 phase, 50 cycles, 3300/565 volts, Delta/Star connected. IM/AF-U low voltage switchgear. Other equipments displayed include non-breathing flameproof motor, 35 h.p. On market 5 years, at £450 f.o.b. British ports. Maintenance and depreciation 5 per cent p.a. Good in coal mines in particularly dirty and moisture-laden atmospheres. Spares and servicing in U.K., training world wide. Also VBC high voltage, metalclad, oil circuit breaker unit with compound insulated busbars for use on systems up to 500 MVA at 11 kV. For use in primary and secondary H.V. sub stations. Two years on market, 12-30 weeks delivery and 20-30 years life allows 10-15 years depreciation period. In coal mines except flameproof areas. Also H.B.C. fuse display. Range of fuse liners for mining. All equipments of British design and manufacture.

John Davis & Son (Derby) Ltd.

Anemometers, range of instruments available for velocities between 30 and 6,000 f.p.m. A recent development is a telescopic rod with remote control to the anemometer and stop watch, thereby giving automatic synchronization between these two instruments. The telescopic rod assembly extends to an overall length of 52 in., and when in the carrying position is 38 in. overall.

Many types of bells shewn. Also glands, indicators, junction boxes, lamps, and other equipments. Flameproof, non-flameproof-transformer, with and without switches and fuses, intrinsically safe signalling, lighting and combined units. E.2/9 emergency stop and signalling unit designed to be installed as an independent piece of equipment or can be banked up to N.C.B., standard gate-end panels.

Laurence, Scott & Electromotors Ltd.

100 h.p. water-cooled motor, Trislot high-torque low-current type, for the main drive of an N.C.B. Shearer-Loader, shown in conjunction with the cutter and haulage head. 50 h.p. motor with built-in hydraulic coupling of special design. Set of motors (main cutter, conveyor, oil pump and traction) for Joy Continuous Miner. 50 h.p. motor with skin-type water cooling. Motorised conveyor drum (shown running), specially developed for the N.C.B. 75 h.p. high tension flameproof Trislot motor, typical of the larger machines with orthodox fan cooling. Motor with built-in isolating and reversing switch, which can be built on to the majority of L.S.E. flameproof motors.

Examples of control gear and testing equipments. Several portable flameproof electrical testing and recording sets, including one developed for the instrumentation of the Bretby tunnelling machine. Plugs and sockets designed for use with L.S.E. motors; flameproof pressure switches.

M. & C. Switchgear Ltd.

Type AF459 certified flameproof direct-on starter rated at 250 h.p. 3.3 kV. Additional features include H.B.C. fuses, Sentryfugue control relay, brake control unit, ammeter and automatic sequence starting. Type A602 certified flameproof air circuit-breaker rated at 200 amps. for voltages from 400 to 650 on a 3 phase, 50 cycle supply and complies with the N.C.B. specification number P7/1950. Type A655 certified flameproof lighting transformer unit, rated at 2.5 k.V.A. or 4.5 k.V.A. complies with the N.C.B. specification number P8/1950. Single or multi-bolt fixing can be provided on the front cover as required.

Unicube type D464 medium voltage group control motor starter assembly comprising a series of standard cubicle units built into board formation. Type A656 certified flameproof drill transformer unit rated at 30 amps. for voltages from 400 to 650 on a 3-phase 50 cycle supply. The unit complies with the N.C.B. specification number P9/1950. Assemblies are available to cover (a) 2.5 k.V.A. double drill, (b) 1.25 k.V.A. single drill, (c) 2.5 k.V.A. 3 h.p. single drill. The drill transformer unit is operated remotely from the drill and a reversing switch is provided on the front cover to give independent direction control to drills.

Type A600 certified flameproof gate-end box rated at 80 amps. and type A601 rated at 150 amps., for voltages from 400 to 650 on a 3-phase 50 cycle supply. Sentryfugue method of sequence control of conveyors provided by a certified flameproof Sentryfugue switch fitted to the conveyor. Type A334 certified flameproof haulage control unit embracing within one enclosure, all components required for the control and protection of medium voltage haulage motors up to 120 h.p. Three separate flameproof compartments accommodate, (a) the stator contactor, rotor controller and relays; (b) isolating and reversing switch; (c) rotor resistance.

Oldham & Son Ltd.

Emergency lighting units, and hand lamps. The GYL hand lamp approved for atmospheres containing methane, the GYL-H for atmospheres containing hydrogen and petroleum vapours.

A. Reyrolle and Co. Ltd.

Electrical gate-end boxes. On market 40 years. British design and manufacture, units are available ex-stock and are at present working in all parts of the world, particularly South Africa, India, New Zealand and Chile. Precluded from no country by existing agreements, they can be operated by unskilled personnel.

Siemens-Schuckert (Great Britain) Ltd.

On show F.L.P 300 k.V.A. air cooled transwitch. The H.T. side fitted with air break isolator and L.T. side with 400 amp. air break automatic 400 amp. circuit breaker. The H.T. and L.T. switchgear suitably interlocked. Unit can be brought up to coal face. Lighting panel at 4½ k.V.A. with 3 outgoing circuits. Flameproof multi-motor control unit. A four panel bank shown in operation in multi-motor sequence by previous control device. Small flameproof motor control panels, for motors up to 20 h.p. and used for controlling fans, pumps, small haulages, etc. Flameproof contactor reversing panels, for motors 50 h.p., 20 h.p., Metering lighting, signalling units, etc.

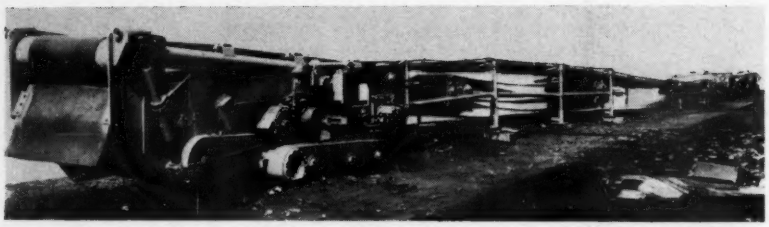
Wallacetown Engineering Co. Ltd.

Various F.L.P. electrical switchgear and transformers. Also compressor protection control unit, signalling transformer, wall or floor mounting direct-on-line and thrust- or protection units as well as various types of remote control switches, flit plug cable couplers, plugs and sockets. Industrial pattern multi-tier switchboards and pillar units as used in coal preparation plants and surface installations.

CONVEYING

British Jeffrey-Diamond Ltd.

The Anderton shearer loader and trepan shearer on the B.J-D. stand (see under "Coal Cutters") are mounted on two C.20 armoured conveyors, the conveyor to carry the 125 h.p. shearer being 30 in. wide, a new (1959) development. The 24 in. armoured conveyor has been on the market for some 3 - 4 years. The 30 in.



Distington-Goodman Ropex conveyor showing head and tail sections with intermediate structure

unit is British designed and manufactured, is available for delivery in 3 - 4 months and is packed in cases and crates. Low maintenance cost is recorded over a long period. The general application is for longwall mining on prop-free fronts with the shearer loaders or coalcutters. In the exhibition the conveyor has a single drivehead frame with 50 h.p. spigot-mounted motor, adaptor and line sections, fixed type return unit, spillplates and pull-over mechanism. The chain is triple-strand. The orthodox 24 in. C.20, fitted with spigot-mounted motor, is shown as a complete conveyor on which two of the machines are mounted. A 30 in. J.20 armoured stage loader is also shown.

Examples of the 61 - HG and 61 - AM chain conveyors are on the stand. Twenty years on the market, these are developments designed by the associated Jeffrey Manufacturing Co. Of complete U.K. manufacture, available for delivery from one month. Already serving overseas in France, Spain, India and Australia.

British Nylon Spinners Ltd.

Range of experimental conveyor belts in all-nylon ducks. Four-ply with tensile strength 7,000 lb./in. width. Also nylon mixture ducks.

Cable Belt Ltd.

Manufacturers show working model of a rope-driven belt conveyor. A patented rope-driven belt conveyor for the transportation of bulk materials, utilizing steel wire ropes to take the driving pull whilst the belt merely acts as a carrier for the material being conveyed. Capable of long distances and high lifts in one stage, with one driving unit, without the need for installing a conventional-type conveyor in tandem. Prime mover usually electric motor. On the market for eight years, of British design, the conveyor is manufactured in Britain for the home and certain overseas markets. In other overseas markets manufactured either in part or in whole in particular country for which it is destined. Availability for delivery depends on length required. For a typical length approx. six months. Price dependent on length, duty, etc., calculated for given characteristics. Usually road transported in U.K., non-crated, in sections. Overseas, shipped in crated sections.

Equipment already serving in France, carrying iron ore at Mine de Murville, quartz at Forminiere in the Belgian Congo, coal at Princess Colliery, Canada, Douglas Colliery, South Africa, and Wallarah Colliery, Australia, and gold-bearing ore at Doornfontein, South Africa. Suitable for all mining conditions, on the spot spares and servicing facilities are available all over the world. Precluded from no country by licensing or other sales agreements, the conveyor can be operated by skilled labour after brief training, facilities for training existing in most major mining countries of the world. The equipment constantly being developed as and when unusual applications arise. Largest customer N.C.B.

General run of an underground cable belt rope-driven conveyor 1½ miles long. A model of this conveyor is exhibited by Cable Belt Ltd.

Cowlishaw, Walker & Co. Ltd.

Range of conveyors and ancillary equipment. On display is the Cowlishaw Walker lumbering conveyor, the C.W. armoured gate feeder conveyor, and the N.C.B. standard heavy armoured flexible conveyor. These exhibited in motion. Also shown is 26 in. high precision plate-belt conveyor.

Displayed is 15 - 21 h.p. chain conveyor driving unit, 12 in. butt sealed joint intermediate section and chain, 12 in. heavy duty intermediate section and chain, 12 in. screw type tail unit, 40 h.p. chain conveyor driving unit, 20 in. butt sealed joint intermediate section and chain, 20 in. heavy duty intermediate section and chain, and 20 in. fixed type heavy duty discharge unit. Also displayed is high precision gearbox for N.C.B. standard heavy armoured flexible conveyor.

Distington Engineering Co. Ltd.

Showing for the first time in this country a new type of high capacity belt conveyor which can extend or retract under its own power, the Distington-Goodman Ropex conveyor. The equipment consists of a drive section, take-up framing, intermediate section and tail section. Designed to extend 50 or 100 ft. without the addition of belting. A section of the Distington-Goodman ropebelt conveyor structure, introduced to the U.K. a year ago, also featured. Structure employs wire ropes instead of rigid side frames, has a 20 per cent. greater carrying capacity because of troughing action of chain-linked idlers, one-third the weight of orthodox equipment. Colliery use and other applications. Shaker conveyor and duckbill loading head.

Dollery & Palmer Ltd.

Westfalia Type PF1 30 in. Panzer feeder conveyor. Type PF1 conveyor with Anbauhobel plough equipment. Midget Panzer conveyor Type PF 00-K.

Dunlop Rubber Co. Ltd.

On show a range of conveyor belting. Starforth range is new (6 months on market), of British design and manufacture. High tensile belts with P.V.C. or rubber cover designed for heavy duty. Available in six weeks. Precluded from no country. Also wholly British and six months on market is Starlon range, for face and gate installations. Incorporates nylon for tear resistance and impact resistance. Safe from fungicidal attack through use of synthetic fibres with patented process. Starlon is available in four weeks. A further product six months on market is Starwear, available with either P.V.C. or rubber covers, has a resilient rayon-nylon carcase of a high strength-weight ratio. Again U.K. designed and constructed and available in four weeks. Primarily for face conveyors but in multi-ply form is suitable for gate and medium trunk installations.

Other established belts shown include Starlife (rubber covered) and the A.B.C. range of B.S. rubber covered belts. Heat-resistant belts displayed are Starhete (for temperatures up to 350 deg. F.) and Betahete (for temperatures up to 250 deg. F.). All are wholly U.K. products.

Eimco (Great Britain) Ltd.

First display in U.K. Model 21 conveyor. Shown with 21 Rockershovel.

Fisher and Ludlow Ltd.

Flexiroll troughing idler conveyor system, exhibited in two separate types, H.D.S. and M.D.S. shown in motion. Type

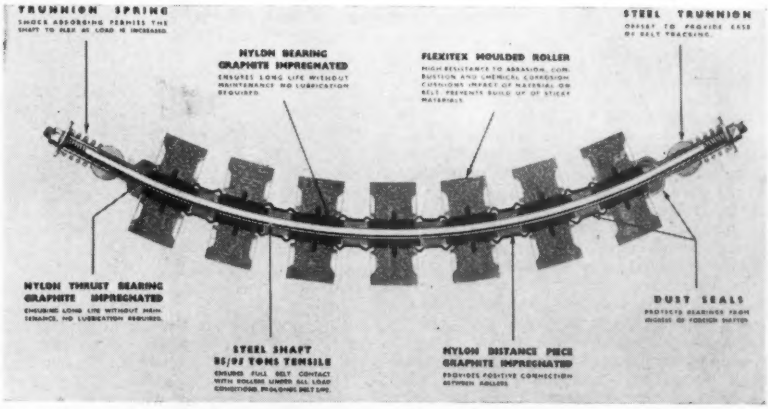
H.D.S. is manufactured in standard 8 ft. sections of bolted construction with the troughing idlers at 4 ft. centres and return idlers at 8ft. centres. Type M.D.S. is designed with stringer rails secured to idler supporting stands by simple taper pins. Nuts, bolts eliminated. Standard stringer rail 4 ft. 6 in. long. Both structures of pressed steel. Features include no maintenance or fire risk, flexibility and light weight, and prolonged belt life.

Of wholly British design and manufacture, the system has been on the market for 3-4 years. Marketed at prices varying with belt width and available for delivery as required. Precluded from no country because of licensing and sales agreements, Flexiroll is normally shipped in packing cases. Distribution through associate companies and agents in Australia, Belgium, Canada, Eire, Germany, Holland, India, Italy, South Africa, Sweden, Switzerland and the United States. On the spot spares and servicing available in these countries through companies and agents. In addition, Flexiroll has been delivered to Cyprus, Peru and the Central African Federation. Following extensive trials, now supplied to all divisions N.C.B. for underground and surface applications.

General applications in coalmining and used also for ash, coke, limestone, sand, gravel, bauxite, uranium ore and other minerals. Can be operated by unskilled labour after brief training and under supervision, following easy transportation underground and speedy erection. Also displayed are E.C.S. idler sets for existing conveyor installations.

The Glover Group

A working full size model in sectionalized form, of a G conveyor. This machine is primarily designed for main trunk systems of high capacity and considerable length for all types of mining throughout the world. Main features are positive drive by a specially-designed chain which relieves the belt and thus the sole function of belt is to carry the material. This permits low power consumption and use of a comparatively thin belt. Also a display of steel wire ropes for haulages, excavators, coal cutters and disc shearers. A working model of a fully-automatic bi-cable aerial ropeway, complete with conveyor system, of a type generally used for with dirty disposal throughout the world. Also a display of steel wire ropes for haulages, excavators, coal cutters and disc shearers.



Fisher and Ludlow's Flexiroll troughing idler

Joy-Sullivan Ltd.

Two new units on display. Stable hole conveyor, portable unit to ease loading of stable holes on longwall faces. Of British design and manufacture, it is available for delivery in one month at £518 f.o.b. U.K. ports, packed in crates.

Not yet exported. Training, spares and servicing facilities do not exist outside U.K. Manufacturers hope to extend overall length to make machine suitable for stable holes of all sizes.

Second new unit is extensible belt conveyor with mobile tail end. Designed for rapid and continuous extension behind the continuous miner. Drive and belt storage is 26 ft. 10 in. long, 72 in. wide, 45 in. high, and weighs 15,500 lbs. Mobile tail end is 14 ft. long, 75 in. wide and 28 in. high. Weighs 7,850 lbs. Made, but not designed, in U.K. Very shortly available for delivery at £7,650 f.o.b. British ports. Boxed for export. Used in coalmining for rapid advance. Can be operated by unskilled labour after brief training, facilities for instruction existing in U.S.A. and U.K.

On market two years is British designed and manufactured 4 tons per min. bridge conveyor. Available for delivery in two months at £906 f.o.b. British ports.

All these machines have general overseas sales licences save for North American continent. Allow 20 per cent depreciation and maintenance charge on all above machinery.

Mavor & Coulson Ltd.

Shown is a bridge conveyor 35 ft. long connecting a Samson loader to short piece of gate conveyor. The bridge conveyor provides a means of removing what is gathered by the loader. The conveyor belt is shown running at 250 f.p.m. Driven by head pulley through reduction gearing running in oil from a 5 h.p. hydraulic motor. When installed underground, the outbye end of the bridge conveyor is either hung from a pivot from a wheeled block running along an overhead girder or, as exhibited, is supported on a carriage astride the gate conveyor. Ancillary equipment.

For face conveying, a new drive for 7 in. by 24½ in. flexible armoured conveyors, with sprocket for moving over controlled by a friction drive. Equipment shown in operation. For roadway conveying, a full range of tandem driving gears including No. 2T 45 h.p., No. 3T 57 h.p., No. 4 85 h.p., No. 5 130 h.p. (at 300 f.p.m.), No. 3 single drum drive (50 h.p. at 350 f.p.m.) with Baker pressure belt. Drives Nos. 25, 50 and 100 (8, 15 and 28 at 300 f.p.m.).

Shown also a dismantled unit of stringer structure and also an erected unit. Three units of stringer structure for 36 in. belt, 2 joints supported from below, 2 hung. An 8 ft. unit of inverted troughing. Six idler rollers for belts from 26 in. to 42 in. on stringer structure. Idler for 48 in. belt. Steering idlers for reversible belt, troughed and return. Cushion idlers for loading

Samson loader carrying bridge conveyor as exhibited by Mavor and Coulson Ltd.

points. Covered idlers for unusually abrasive material. Plain return idler. Disc return idler for sticky or corrosive material. Idler for 60 in. picking belt.

Mining Engineering Co. Ltd.

Belt conveyors, 36 in. wide 100 h.p. trunk drive Type 100S, 36 in. 75 h.p. gate conveyor Type 75G30 shown working, 30 in. 50 h.p. gate drive Type 50G20, 26 in. 25 h.p. face drive Type 25G, 20 in. 15 h.p. face conveyor Type 15G shown working and 24 in. 10 h.p. single drum drive. Armoured conveyors are 300 mm. 7 in. heavy armoured 2/40 h.p. conveyor drive Type S80 and 500 mm. 5 in. heavy armoured 2/22½ h.p. conveyor Type S20R Mark B shown working. Scraper chain conveyors are 20 in. flat link chain 40 h.p. drive Type S40F Mark B and flat link chain 15 h.p. drive Type W 15 F. Models of 30 ft. long chain belt conveyor and 24 ft. long. Telescopic belt conveyor.

Sundry types belt and chain conveyor structure including one new design. Sundry equipments.

Rubber Improvement Ltd.

Rilflex green-for-safety ultra high tensile fire resistant and anti-static p.v.c. multi-ply conveyor belting based upon Terylene Leonex belting.

Sheepbridge Equipment Ltd.

Example of a conveyor, shown in motion. Troughing and return idlers by Sheepbridge Stokes Ltd., by centrifugal casting process (Centricast). Available for immediate delivery. In transit parts are crated, others protected. Precluded from no countries by existing agreements.

Richard Sutcliffe Ltd.

A new design of driving head, the Two Hundred, shown. An extension to the existing range of two-drum driving heads, the machine designed to take advantage of heavy duty belts using synthetic fibres in the duck construction, which extend the economical range of belt conveying far beyond the capacity of standard cotton ducks. Intended for operation where heavy duty great length or steep gradient requires high horsepower. Capacities of 200 to 325 h.p. at speeds from 350 to 600 f.p.m. can be accommodated. Has two 42 in. diameter driving drums.

The Goliath 50 three-drum driving head. This 50 h.p. 3-drum head is designed to incorporate the benefit of experience gained on heavier Super Goliath and Goliath 80 machines. Has the primary drive on clean side of belt, thereby promoting increased belt life and makes use of a split first reduction gear box. Spleened shafts used for mounting of all spur wheels. Size 6 ft. 6 in. by 4 ft. 6 in. by 5 ft. high. Approx. weight 7 tons. On the market for two years, machine is developed from the Goliath 6, of which over 2,000 sold. British design and manufacture. Available six weeks ex-works. Shipped in timber crates. Goliath 6 working in Australia, South Africa, Malaya, Holland, and other countries. Precluded from no country by existing agreements, spares and servicing facilities exist in India, South Africa, Canada, Spain, Portugal, Australia, Holland. Used in all types of mining, it can be operated by unskilled labour after brief training, facilities for training existing in South Africa, Holland, Australia, Spain, Portugal, India, Canada.

Trojan 120 h.p. gearhead. 2-drum drive gearhead, 120 h.p. at 330 f.p.m. and 85 h.p. at 235 f.p.m. These belt speeds available using standard gear reductions with a 1,000 r.p.m. motor. Belt widths are available from 36 in. to 60 in. On market 10 years. Of British design and manufacture unit is available in 8 weeks ex-works. Already serving in Empresa Nacionale Calvo Sotelo, Spain, spares and servicing available in India, South Africa, Canada, Spain, Portugal, Australia, Holland. Used in all mining operations, training for personnel exists in countries noted, and Trojan is not precluded from any country by existing agreements.

Bunker conveyor designed to fit into a normal pit bottom roadway where it accepts peaks of production from coal face and discharges a steady continuous load which can be handled efficiently by the winding system and treatment plant without overload to either. U.K. design and manufacture, on the market two years, and available in three months ex-works. Used in all types of mining, spares, servicing and personnel training facilities exist in countries mentioned. Precluded from no country by existing agreements. All above units shipped in timber crates.

"Armadillo" armoured chain face conveyors represented by hydraulically powerep unit. Also shown is Tigress 60 h.p. tandem drive, Little David III - 15. Shown working are scraper chain stage loader, Gazelle light type scraper chain face conveyor, Armadillo, and models of Goliath 6-60 h.p., Trojan 120 h.p., Goliath 80 h.p. Bunker conveyor.

Hugh Wood and Co. Ltd.

The TB80 Huwood conveyor is shown in motion demonstrating the quadrupartite construction of the drive head. A feature is the Featherbed tail end receiving hopper. Of the other belt conveyor exhibits, prominent is the heavy duty TB200 drive head. Conveyor sections and idler sets. Drive heads Type 10W and Type 50W, illustrate the features of range.

In addition to the armoured Python conveyor on the Slicer exhibit, two stationary complete chain conveyors are shown, the HS/6 and P.F. conveyors. Designed mainly as a gathering conveyor, the HS/6 scraper chain conveyor can be used also as a face or heading conveyor. The P.F. is a rigid conveyor which requires no tensioning and is easily extendable. Used on longwall faces in bords.

Huwood Suspended F.T. section in a Northumberland mine

Sutcliffe bunker conveyor showing the bunker being filled with ripping dirt

ANCILLARY EQUIPMENT FOR CONVEYING

British Jeffrey-Diamond Ltd.

The 15 h.p. and 25 h.p. face belt conveyor drive units are shown, also 30 h.p. and 75 h.p. gate belt conveyor drive heads. Idler rollers and accessories. Present designs of drive units are result of 30 years' development. All of U.K. design and manufacture. Delivery from one month in packing cases and crates. Maintenance costs are low, and overseas the equipments are operating in France, Spain and Czechoslovakia.

Brush Electrical Engineering Co. Ltd.

45 h.p. flameproof motor for armoured conveyor drive. On market two years. Available immediately at £508 f.o.b. British ports. Also 12 h.p. flameproof motor designed for Mining Engineering Co. Ltd. and built into conveyor drive head. Immediately available at £295 f.o.b. British ports.

Neither of these two equipments is precluded from any country by existing agreements. Both British designed and manufactured. Annual depreciation and maintenance rate approximately 5 per cent. Used only in coalmining. Spares, servicing and training facilities only in U.K.

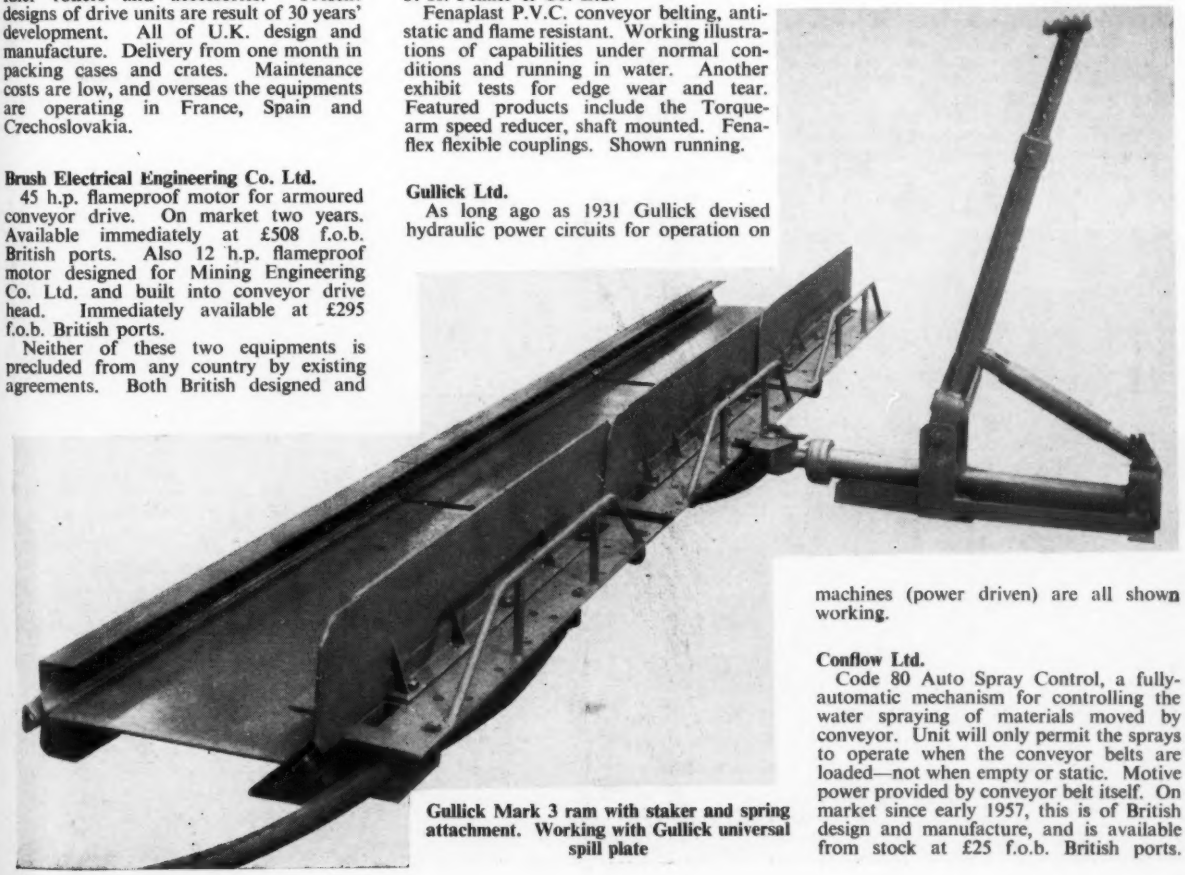
Also FQT 240 flameproof 40 h.p. motor for conveyor drive.

J. H. Fenner & Co. Ltd.

Fenaplast P.V.C. conveyor belting, antistatic and flame resistant. Working illustrations of capabilities under normal conditions and running in water. Another exhibit tests for edge wear and tear. Featured products include the Torque-arm speed reducer, shaft mounted. Fenaflex flexible couplings. Shown running.

Gullick Ltd.

As long ago as 1931 Gullick devised hydraulic power circuits for operation on the coal face. Mark III ram shown, together with the Stakers developed for seam heights varying as low as 1 ft. 10 in. to as high as 7 ft. 6 in. The ram has been designed so that the number of hoses used on an installation is reduced to the minimum. Also designed with special low friction seals to give maximum efficiency and maximum thrust where it is required. Special rams have been developed for such purposes as moving over the heavy conveyor gear heads and for tensioning ropes and chains used on the coal face for hauling power loaders.



Gullick Mark 3 ram with staker and spring attachment. Working with Gullick universal spill plate

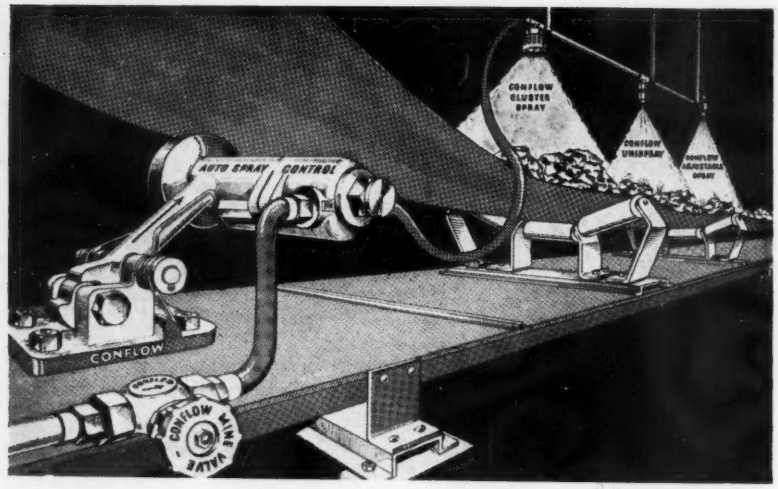
Hayden-Nilos Ltd.

On the market since 1958 the Zipper conveyor belt lacing machine, hand operated, suitable all sizes, types of conveyor belt. British design and manufacture and available immediately, it is delivered in timber cases. Spares and servicing facilities exist in Australia, South Africa, Malaya, United States, France, India. Precluded from no country by existing agreements, training facilities exist in countries mentioned. Equipment can be operated by unskilled labour after brief training.

Also on show power driven (electric motor) conveyor belt stitching and cutting machines for re-building old or worn belts. U.K. design and manufacture, they are available immediately, delivery being made in timber cases. On the market 12 years. Can be sold in all countries. Power driven (electric motor) machines for inserting end joints in conveyor belts. Same remarks apply as for stitching and cutting machines. Jointing machines, power and hand driven, hand operated belt cutting machines, power driven re-building machines, belt reeling and re-rolling machines (power driven) are all shown working.

Conflow Ltd.

Code 80 Auto Spray Control, a fully-automatic mechanism for controlling the water spraying of materials moved by conveyor. Unit will only permit the sprays to operate when the conveyor belts are loaded—not when empty or static. Motive power provided by conveyor belt itself. On market since early 1957, this is of British design and manufacture, and is available from stock at £25 f.o.b. British ports.



Conflow auto spray control

Annual expenditure on maintenance and depreciation is approximately 25 per cent. Shipped in carton and cased. Agencies recently arranged, but no export as yet, other than to France. Spares and servicing available in Australia, New Zealand, South Africa, Central African Federation, Canada and U.S.A. Precluded from no country by existing agreements.

Mastabar Mining Equipment Co. Ltd.

Brand new and on market from July 1, 1959, the Comet hydraulic power lacing machine. Specifically designed to fulfil a need in colliery belt repair shops and will mechanically joint all belts up to 42 in. wide in thicknesses from ¼ in. to ⅜ in. Incorporates a built-in belt cutter and squarer and is designed to insert 15 in. of lacing in one cycle. Operation is fully automatic and an indicator gauge is provided to ensure correct selection of fasteners and machine settings. Can be operated by unskilled labour. British design and manufacture and available for immediate delivery at competitive prices, it is shipped in slatted crates. It is precluded from no countries, but at the moment no spares or repair facilities exist anywhere. Also shown are the components that comprise the Comet belt lacing system.

Siemens-Schuckert (Great Britain) Ltd.

Flameproof gate-end panels. Selection switch with 200 amp air break circuit breaker. Panels for conveyors, loaders, etc. Two sizes with 80 amp and 150 amp contactors. 20 h.p. flameproof motor control panel for small haulages, etc. Reversing panels for 50 h.p. motors and 20 h.p. motors.

Richard Sutcliffe Ltd.

Patented inverted belt system shown. Allows jib delivery on double unit bottom belt face conveyors without the need for stepped faces or floor dinting in the gate. A modification of this system for use on top belt gate conveyors provides for a 180 deg. twist at each end of the bottom belt which confines dust deposition to these two points only, and eliminates the build up of fines at each return roller. On market three years, of British design and manufacture, unit is supplied four weeks ex-works, shipped in timber crate. Spares, servicing and personnel training facilities in India, South Africa, Australia, Canada, Holland, Spain, Portugal. Precluded from no country through existing agreements and used in all types of mining.

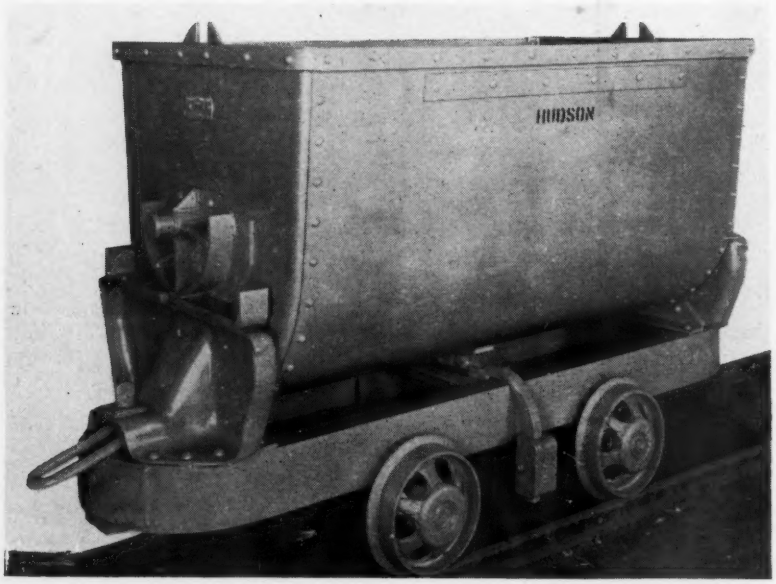
Multi-blade scraper. British design and manufacture and on market for six months, this is available in three weeks ex-works. Packed for delivery in timber crate, with spares, servicing, and worker training facilities available in countries mentioned. Used in all types of mining.

The multi-blade scraper effectively takes care of all disadvantages of normal counterweighted scraper. Blades are 5 in. or 6 in. in width and have wear resistant rubber bonded on the leading face to a height of 2 in., the blade being supported at right angles to the carrying surface of the belt by a spring steel bar parallel to the centre line of the conveyor and carried at the opposite end by a cross shaft located on the two side frames. By mounting these bars at a pitch slightly greater than the width of each blade, using alternate bars of different lengths, it is possible to have two sets of blades across the width of the conveyor, continuous in each case except for short spaces through which the bar in the alternate line passes. Belt is virtually scraped twice at each pass except for the narrow spaces referred to.

Hugh Wood & Co. Ltd.

Two examples of gearboxes in sectionalized form—SL/3 gearbox for belt conveyors, and the P40 gearbox. New concentric signalling system. The system is interlocked with the control apparatus of either haulage or conveyor, "fails to safety" under all conditions of fault.

Hudson 40 cu. ft. capacity double-side tipping wagon



TRACK HAULAGE

Associated Electrical Industries Ltd.

Products of the A.E.I. Heavy Plant Division and member companies Metropolitan-Vickers Electrical Co. and British Thomson-Houston Co. Ltd. Metropolitan-Vickers show the storage battery locomotive, Type DBF/12, driven by two series wound traction motors specially designed for underground mining work. A.E.I. Heavy Plant Division shows a model of a man-riding carriage equipped with automatic track brake system.

W. G. Allen & Sons (Tipton) Ltd.

Accumulator conveyor car speciality machine designed to increase the effective working capacity of a loader in drivages such as stone headings, etc. in mines. Generally the effectiveness of the loader is regulated by the speed at which cars can be loaded, and in practice this is a bottleneck in the drivage speed. The Allen-Sotim accumulator conveyor car is designed to eliminate this bottleneck. Consists of a hopper which can accumulate a certain tonnage of spoil, with a conveying element transferring the spoil to a discharge point under which a mine car is "spotted". The mine car can be "inched" forward to ensure full loads, and when full is pushed away from the accumulator car by rams for another car to be brought up for filling. The conveyor car is suitably attached to the loader. Standard car is designed for air operation and is fitted with a com-

pressed-air motor driving the necessary conveyor element through reduction gears. Can be broken into sections to fit inside cage for re-assembly underground.

The hydro-mechanical tub tippler has been designed for the tipping of coal tubs on to a conveyor running parallel to the track. Hydraulic system gives control during the whole of the tipping cycle and the tippler can be inched, stopped, or reversed in any part of the cycle. To give ample working clearance in the chute plates, the tippler has been designed to tip on to a 36 in. conveyor running parallel to the tub track, and at 6 ft. 0 in. centres from centre line of track to centre line of conveyor.

Brush Electrical Engineering Co. Ltd.

Two scale models of British-built diesel electric shunting locos. Available from stock and used pithead duties. They are 0-6-0, 500 h.p. loco at 51 tons ; BO-BO, 515 h.p. loco at 70 tons.

Dollery and Palmer Ltd.

Crowborough mine cars on show. Special man-riding car. " Hausherr " electro-hydraulic propelling unit, electro-hydraulic retarder, electric creeper.

Greenwood and Batley Ltd.

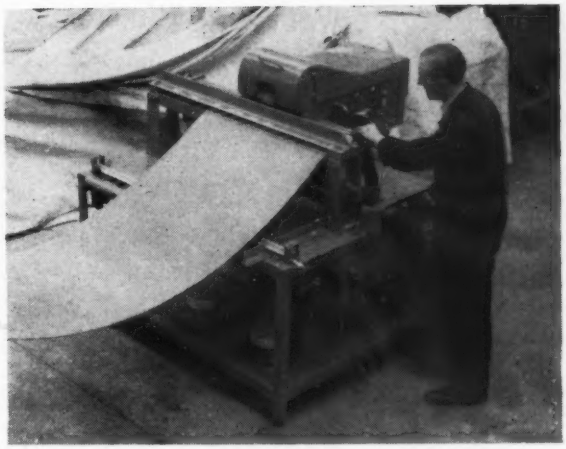
14 ton battery-electric approved type mining locomotive, shown working. A 5-ton battery-electric approved type mining locomotive. Miscellaneous electrical components.

Robert Hudson Ltd.

40 cu. ft. capacity double side tipping wagon. Supplied in large quantities for tennelling projects both in U.K. and overseas. The " U " shaped body is specially designed to give maximum capacity within minimum overall dimensions and the compact design which results, has proved to be very popular in tunnels and other undertakings where space is at a premium. Car transfers exhibited with the 40 cu. ft. capacity tunnel wagon mounted on the carriage. The object of this device is to ensure that empty cars can speedily be made available for loading by means of a mechanical shovel from a train operating in a heading which is being advanced along a single light rail track. Using a car transfer of this type any car in a train can be selected and transferred from the main track when the remainder of the cars can be moved up or down the heading as required. In this way the loader can be kept working almost continuously without the usual delays associated with car changeover. Carriage is pushed on to the main track and the train allowed to pass over it until the appropriate car is in position. The car is then uncoupled and locked in place on the transfer by means of two simple catches.

39 cu. ft. capacity fixed body (tippler type) mine car. Designed particularly to fulfil export requirements. A wide range of wheels and axles.

A full size working model of a Hudson patent buffer and coupling specially designed to remove the hazard of coupling cars when the buffer heads are in contact. Ingham Automat safety man-riding car. Exhibiting one unit which would normally form part of a man-riding train. An Ingham man-riding train consists of one master car complete with axle mounted Automat governor for each direction of incline and any required number of brake cars. Manufactured by Robert Ingham and Sons Ltd. an associate company.



Mastabar's Comet hydraulic power belt lacing machine

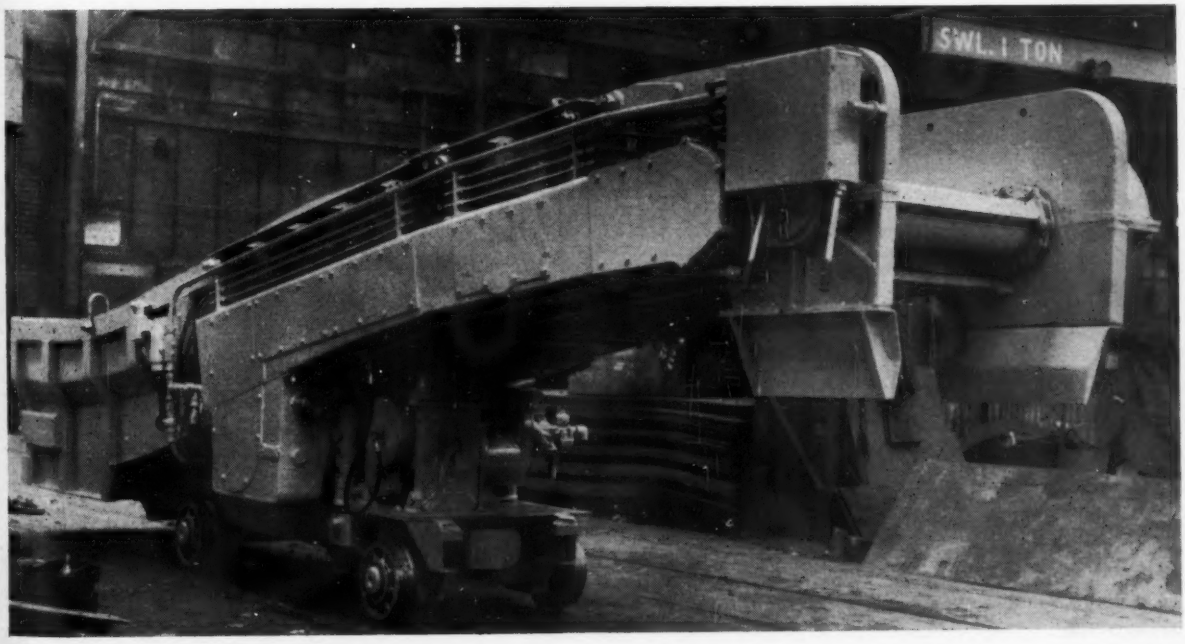
Oldham & Son Ltd.

The Pg cell for electric-battery locomotives, using a completely new type of armoured porous tubing to encase the grid spines and active material of the positive plates. Increased capacity enables locomotives to work for longer periods and to move heavier loads.

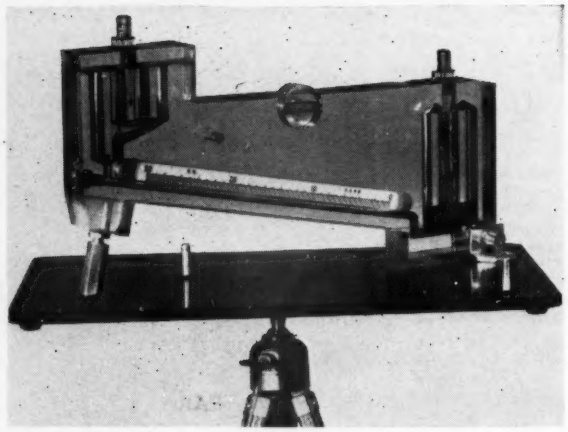
Sheepbridge Equipment Ltd.

Equipment displayed on market collectively 20-30 years. Mine car, all welded construction, roller-bearing wheels. Weight 22 cwt. Delivery 6-8 weeks. Man-riding mine car ; an example of master car designed to allow automatic braking system. Fitted with track brakes and overspeed clutch. Available 6-8 weeks at range £230-£460 f.o.b. British ports. Portable haulage 25 h.p. Demonstrated in motion. One of range carrying Buxton Flameproof Certificate. Immediate delivery at range

Allen-Sotim accumulator car



Four-rope Koepe suspension gear by Watson and McLean



The Mark 4 gauge shown by Combustion Instruments

£360-£1,350. Already serving South Africa and India, spares, servicing and training facilities exist in South Africa.

All these equipments of British design and manufacture. They are precluded from no country by existing agreements.

Richard Sutcliffe Ltd.

Tub and car handling equipment. Complete range of hydraulically operated decking and mine car control equipment. Tub stops, retarders pullers and pushers, chain rams, spotting creepers, loading stations, etc. On market two years of U.K. design and manufacture, these are available six weeks ex-works and are packed in timber crates. Training facilities for personnel, spares and servicing available in India, South Africa, Australia, Canada, Holland, Spain, Portugal. Available for sale in all countries.

Watson and McLean Ltd.

Tub coupling chains. Manufactured in U.K. of British design. Supplied in higher tensile steel (1.5 per cent manganese). Widely used in U.K. mines. On the market 15 years they are available in 2-3 weeks at a budget price f.o.b. British ports of 8s. to 20s. per coupling chain, price depending on type. Consumable stores, the coupling chains are shipped in barrels as deck cargo.

Lashing chains for tub haulage up inclines. Available in up to three weeks. Expendable stores, they are shipped in barrels as deck cargo at a budget price of £2-£3 f.o.b. British ports, price depending on length and end fittings.

Edward Williams

British manufactured Wilrol roller units for haulage ropeways.

WINDING

Associated Electrical Industries Ltd.

Products of the A.E.I. Heavy Plant Division, and member companies Metropolitan-Vickers Electrical Co. Ltd. and British Thomson-Houston Co. Ltd. The A.E.I. Heavy Plant Division shows a working model of one of the tower-mounted four-rope friction winders installed at Rufford Colliery (N.C.B.). This is a model of the winder installed in No. 3 shaft. It is designed to raise (12 ton capacity) skips in balance, from a depth of 3,100 ft. at a maximum rope speed of 47.5 ft. per sec., and to give an output of 450 tons of coal per hour.

Austin Hopkinson and Co. Ltd.

Pikrose equipments. Sizes 1, 2, 3AC electric 2-speed hoists ; size O compressed-air hoist.

Joy-Sullivan Ltd.

Wide range of British-manufactured hoists.

Oldham & Son Ltd.

A shaft-signalling supply unit specially designed to supply a circuit of emergency lighting in a winding engine room, and to provide a reliable power source for shaft-signalling operation. Two identically-rated batteries are employed to ensure continuity of supply to the signal load. The equipment is self-contained in a floor-mounting sheet-steel cubicle finished in hammered bronze stove enamel.

Watson and McLean Ltd.

Half-scale models of 4-rope friction winder suspension gear, together with typical balance rope attachment arrangement incorporating totally enclosed ball-bearing swivel. Half-scale models illustrating five or six arrangements for guide and rubbing ropes for vertical mine shafts using drum Koepe or multi-rope winding.

Cage suspension gear of British design and manufacture has been on the market 15 years and is available for delivery from three weeks to five months, depending on necessary modifications for individual installations. Annual expenditure on depreciation and maintenance approximately 10 per cent. Shipped, boxed or in barrels, it is operating in India and South Africa, and is applicable to all underground mining.

Multi-rope cage suspension gear. Again U.K. design and manufacture. On the market three years and available for delivery in three to six months. Estimated annual expenditure on maintenance is 10 per cent. Individually budgeted, it is shipped in boxes or barrels as hold cargo. Applicable to all underground mining it is operating in South Africa.

Westinghouse Brake and Signal Co. Ltd.

Displayed is a large model illustrating pit top and shaft inset mine car handling equipment designed for present day practice. For demonstration purposes this scale model illustrates a variety of equipments, and whilst not representative of any particular pit, is typical of the working conditions of many mines using Westinghouse Pneumatic control apparatus.

MINE COMMUNICATION

A. T. & E. (Wigan) Ltd. and Communication Systems Ltd.

New type of private automatic telephone exchange, designed to provide safe communications in potentially dangerous atmospheres developed by A. T. and E. in collaboration with N.C.B. Known as the Type No. 58. This system has been certified by the Ministry of Power. Also A.T.E. Gate Interlock system, developed to promote efficient working of mine shafts with increased safety. Principles shown by working model. Other items include Type 57 Shaft Signalling System underground locomotive haulage signalling system Type 56, and coal face signalling system.

LUBRICANTS

Revol Ltd.

Voler compounds for exposed gears, wire ropes, etc. Reductol, a new lubricant for enclosed gear units, is a high quality mineral oil with a suspension of superfine colloidal graphite. Also showing are thread lubricants, graphited compositions for rust prevention on screw threads. Voler Penetrant, a release and penetrating fluid, and Drylube for applications where normal lubrication is impossible.

Liquid belt treatment. On the market for 31 years, the compound is of British design and is manufactured wholly in this country. It is available from stock, and is normally shipped in barrels and drums. Already finding application in north European countries, Scandinavia and the Commonwealth, these treatments can be supplied by agents in the areas indicated. The compound is particularly suited for flat and V rope belt drives in all types of mining operations.

VENTILATION

British Nylon Spinners Ltd.

Samples flexible PVC-proofed nylon mine ventilation tubing. Proofed weight often only about 8 oz. per sq. yd. Also sample nylon fabric proofed with special flame-resistant neoprene. Reinforced spiral tubing.

Combustion Instruments

Display includes liquid column pressure gauges in solid blocks of transparent Perspex, inclined tube manometers of similar construction suitable for airflow measurements underground, CO - test tubes and a Minchin double aspirator for estimation of CO traces in mine air. All these models shown working. Also displayed is Minchin-Orsat apparatus for flue gas analysis and the new C-1 vacuum gauge.

The Mark 4 portable inclined-tube manometer is used in ventilation surveys, etc. In the Perspex block it is very robust and has proved its worth in many Australian mining operations. Of British design and manufacture, the instrument has been on the market for 18 months. Available from stock in 3-4 weeks, its packed dimensions are 9½ in. by 12 in. by 1½ in. at 3½ lb. weight in carrying case. It can be delivered by parcel post and budget price f.o.b. British ports is £23 10s. 0d. in case but without tripod. Main use in mining is for ventilation surveys with pitot tube in the measurement of air pressure drops along roadways. The instrument currently used by N.C.B. Northern Division in Northumberland (areas 2 & 3).

The Minchin double aspirator and CO-test tubes are used in mining for air analysis, detection of heatings and for checking CO in diesel exhaust.

The MK1 portable manometer, is a portable pressure gauge of liquid column type in Perspex. Weighs from ½ lb. to 4 lbs. according to size and its range is 0 in. to 2 in. w.g. to 0 in. to 40 in. w.g., oil, water or mercury. On the market three years it can be supplied from stock in 3-4 weeks at budget prices f.o.b. British ports up to £30. Sent by parcel post and no expenditure on maintenance. It is used in coke ovens in Belgium and France, and in underground ventilation surveying and methane drainage projects.

All these equipments can be operated by unskilled or semi-skilled labour. On the spot spares or servicing facilities are not available in any country, but the units are not precluded from sale overseas by licensing or similar agreements.

Mining Engineering Co. Ltd.

Auxiliary ventilation equipment. Range of compressed-air fans. Range of electric fans. Mecotube.

Telehoist Ltd.

"Velflo" circular duct fittings : 12 in. "Velflo" mild steel galvanized elbow for circular ducting for air conditioning, ventilating, dust extraction, etc. On the market since January, 1959. British design and manufacture. Available from stock within six weeks at budget price f.o.b. British ports £5 17s. 7d. Plans for modification being made.

MINE CLOTHING

Malcolm Campbell (Plastics) Ltd.

A complete range of safety helmets and footwear. Of special interest in coalmining is the Texolex helmet range, from peaked model at 10½ oz. to wide brim at 14½ oz. Lamp brackets of improved design. Extra mesh reinforcement in crown is available. Texolex helmets and layered cotton fabric impregnated with phenol-formaldehyde resin. Manufacture is to standards exceeding British and foreign requirements.

Protective footwear includes miners' protective boots. External steel toe caps, lipped tip and heel plates. Complying with BSS 1870 Grade 1.

CRUSHING EQUIPMENT

British Jeffrey-Diamond Ltd.

Five crushers applicable to mining operations on show ; namely 24 in. by 20 in. heavy duty double roll crusher, where coal is broken between two rolls to give product free from slivers, 24 in. by 20 in. steel frames single roll crusher incorporating automatic lubrication. Also the Mud Hog, a machine with travelling breaker plate design for sticky or wet feeds, Rock Buster for pit refuse, and pre-breaker feeder for underground rippings to be passed to stowing machine. In their present form some of these are new developments, all are of British design and manufacture. Delivery in packing cases. Time is 2-5 months.

PREPARATION

West's (Manchester) Ltd.

Principal exhibit a 6 ft. by 20 ft. Flämrich raw coal screen, shown prior to installation at a Durham colliery. Flämrich screens are available in sizes up to 7 ft. wide by 25 ft. long. Introduced to U.K. early in 1956, since when more than 80 screens have been installed and over 130 ordered. Working model of the Wemco dense medium separation plant developed by the Western Machinery Co., San Francisco, and supplied in U.K. by West's. Process employs magnetite as the dense medium, with magnetic recovery, and incorporates the Wemco drum separator. Process also has a wide application in the treatment of ores and non-metallic minerals. Wemco flotation cell, demonstrated by a laboratory unit.

MINE DRAINAGE

British LaBour Pump Co. Ltd.

Working model of Type USL self priming mining pump. Specially developed for use in mining. Particularly suitable for face drainage surfaces.

A 6 ft. by 20 ft. single deck Flämrich screen with self-clearing mesh and ball deck, sizing coal at Vane Tempest Colliery coal preparation plant. Flämrich screen equipments are exhibited by West's (Manchester) Ltd.

Holman Brothers Ltd.

Introduced is Goodyear face drainage pump, size 12, fitted with flameproof motor. Comprising Goodyear A12 pump and English Electric flameproof 7½ h.p. motor mounted on skid base. Output 70 g.p.m. with 200 ft. head and 28 ft. suction lift. Weight 6 cwt. 52 in. by 23 in. by 24 in. Motor (electric) 440 v. ; 3 phase, 50 cycle. On market one month, British design and manufacture, available for delivery September, 1959 at £295 f.o.b. British ports, complete with flameproof motor. Annual depreciation and maintenance estimated at £30-£40. Precluded from no country by existing agreements, spares, servicing and personnel training facilities are available through Holman world-wide organization. The pump has rubber to metal positive displacement, is an axial flow, pulseless, self priming, self lubricating unit. Ideal for face drainage, specialized tests are being carried out in selected mines. Results in September.

Industrial Pumps Ltd.

Flygt pumps for use in mines, quarries. Particularly suited for shaft sinking and tunnelling when pumping slurries and abrasives. Do not need priming, are fully submersible, will run on snore. Shown in operation are B80K, 3 in. delivery, 5 h.p. flameproof, and standard type B38L, 1½ in. delivery, 1½ h.p., other units B80L, 3 in. delivery, 5 h.p. ; B80M, 3 in. delivery, 5 h.p. ; B150/200, 6 in.-8 in. delivery, 56 h.p., all standard types. Type CS unchokeable sludge pump. On market since 1947, and imported from Sweden. Generally available ex-stock. Model B80K is awaiting Buxton flameproof certificate. Budget prices f.o.b. British ports are B38 (£95), B80L or B80M (£214) and B150/200 (£1,118). Depreciation and maintenance costs 15 per cent to 20 per cent per annum depending on conditions. Strong ocean packing. Current operational sites, U.S.A., Germany, France, Netherlands, South Africa, Australia, Belgian Congo, Canada and Japan.

Spares, servicing and personnel training facilities exist in all countries in Western Europe, Canada, U.S.A., Morocco, French West Africa, French Equitorial Africa, Belgian Congo, Northern and Southern Rhodesia, Union of South Africa, India, Australia, New Zealand, the Philippine Islands, Japan, Malaya, Brazil. Suitable in coal and metal mines, pumps can be operated by unskilled labour after brief training.

Megator Pumps & Compressors Ltd.

Megator M. Type snore pumps for face drainage, capacity 50 g.p.m. against heads to 150 ft. Light, portable puddle pump, the flameproof motor and pump mounted on a mining-type base fitted with lifting handles. Capacity 8 g.p.m. Type GH mining pumps, capacities up to 160 g.p.m. against heads up to 350 ft. Also Dolphin floating suction strainer for mine and quarry drainage.

Mono Pumps Ltd.

Mining type pumps on market 25 years. All British design and manufacture, and available for immediate delivery. Used for surface and underground duties in all types of mining, these pumps operate practically throughout the world and can be operated by unskilled labour. On the spot spares and servicing facilities available in 72 countries. These pumps precluded from sale in U.S.A., France, Germany, Belgium.

On display, the Mono automatic snorer bypass has been developed to provide adequate protection for pumps when feeders might diminish or cease for long spells. Bypass operates automatically when needed, and it closes off from the pump when feeder moves sufficient water to allow pump to commence drainage duty. No loss of pumping efficiency.

Another demonstration on the stand is related to the reclamation of combustible material from washery waste. A D62 Mono Pump shows its ability for pumping slurries for filter pressing when steady performance is of great advantage in producing a firm and even cake.

Two new pumps recently introduced into the Mono range of mining pumps are shown. On is the new face pump which is designed for use at the face where seepage water might be interfering with coal cutting operations. It is of handy size for easy manipulation in restricted areas. The unit is fitted with a low voltage Buxton certified motor suitable for taking a supply from a drill panel, usually available at the face. The other new unit is the D68 size Mono Pump which is capable of working against 460 ft. heads. In addition, the stand shows machines suitable for dust suppression duties involving coalface infusion, wet cutting and conveyor spraying.

Telehoist Ltd.

Associate company of Wilmot Breeden. Display is the range of hydraulic screw-type pumps and associated equipment. Made in Britain to Swiss S.I.G. design by agreement. On market since 1945 and available for immediate delivery, the S.I.G. pump is made in three basic ranges ; up to 300 p.s.i., up to 1,000 p.s.i. and up to 2,500 p.s.i. Annual expenditure on depreciation and maintenance estimated at approximately 15 per cent. Normally cased for shipment. These units already serving satisfactorily overseas, on the spot spares and servicing equipment being available in U.K., Switzerland, Germany, France and Italy. Useful on all hydraulically operated equipment for all types of mining. Company sells in U.K. only. Working exhibit demonstrates on stand.

ANCILLARY EQUIPMENT

British Nylon Spinners Ltd.

Nylon weft fire hose. All nylon fabric impregnated with PVC, rot-proof and does not require drying. Several types of pressure hose reinforced with nylon.

Conflow, Ltd.

Exhibited is a full range of hydraulic control valves and dust-suppression equipment. Display includes underground hydrant control valves, stop valves, ratio reducing valves, can valves, relief valves, mine gauges, mating flanges, and sprays. Specially featured are the latest auto-spray control and the new range of maxway valves.

The Consolidated Pneumatic Tool Co. Ltd.

Lagonda tube cleaning equipment. Pumps, hammers, etc.

Dollery and Palmer Ltd.

Hausherr portable high-pressure water infusion pump, Type 250/30, imported from West Germany. On the market for 2-3 years, this portable apparatus provides the means of infusing a longwall face or staple hole when the normal water mains pressure is inadequate. Compressed-air operated, with air pressure 60 lbs. p.s.i. together with a similar water mains pressure, infusion pressure 3,000 lbs. p.s.i. can be achieved. Device is particularly useful in conjunction with coal ploughs or other forms of mechanization where prior easing of hard coal beneficial. Also on conventional faces where shot firing is practised such prior treatment reduces normal shot requirements. Coal faces so treated are almost dust-free. Available for delivery in a few weeks. For general use in coal-mining, it is used on the Continent and in the U.K.

Dollery and Palmer pneumatic picks, auxiliary ventilation fans, compressed-air pushing cylinders, compressed-air fittings.

J. H. Fenner & Co. Ltd.

For the first time at any exhibition the new range of Fenner-Dodge SC ball-bearing plummer blocks. Other products V-belt and chain drives all incorporating Taper-Lock bushes.

Gullick Ltd.

Universal spill plates, hose fittings and couplings, the Gullick burster, wire braided hose, Mark II hydraulic pump and accessories.

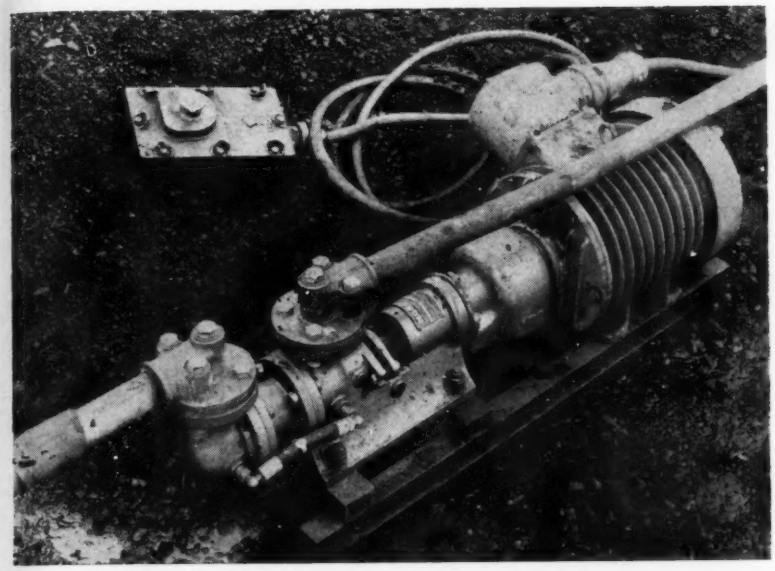
Hardypick Ltd.

Ripper C.N.B., digger CFF 374, backfill rammer, pneumatic picks, bench rammer. Dust allaying devices, WA3 for percussive and Autowet for rotary drilling. Wire rope cutters, pit prop pullers, conveyor pusher and general range of tools.

Hayden-Nilos Ltd.

On show pulse infusion shotfiring

Elements of the S.I.G. screw pump exhibited by Telehoist Ltd.



The small Mono Pumps face unit for dealing with nuisance water at the working face

equipment, hose clips, fittings and couplings, arch stilts, strapping equipment. All shown in use.

Holman Brothers Ltd.

H.Y.L.A. Airwinch, H.J.A. Airwinch, RW7 Rotowinch with Maxam remote reversing and brake control, 5 R.H.L. cable winch.

Austin Hopkinson and Co. Ltd.

Latest addition to Pikrose haulage gear range, which incorporates all features of the Pikrose range, together with a hydraulic transmission gear manufactured by Vickers-Armstrong Ltd., marketed under the trade mark "V.S.G." (Variable Speed Gear). Equipment shown in motion.

Also sheave blocks, anchor bolts, compressed-air engines.

Mine Safety Appliances Co. Ltd.

Miners' electric cap lamps, combustible gas detectors, measurement and alarm systems, toxic gas detectors, eye protection, head protection, reflective signs, etc.

Rubber Improvement Ltd.

Leonex brattice cloth, ventilation tubing, Rilite glass-fibre roofing.

Sheepbridge Equipment Ltd.

Portable 60 ton bending and straightening machine. Shown working. Range now in use for handling pit arches, roofing bars, rails, etc. Of British design and manufacture it has been 20 years on market. Price £600 approx. f.o.b. British ports. Precluded from no country, a new design is now being manufactured to make the machine a universal press.

G. E. Simm Engineering Ltd.

The Band-it stainless steel clamping system. Applications for mining are fixing flexible neoprene sleeves on to P.V.C. ventilations ducting, attaching wooden stilts to the bottom of colliery arches, pipe suspension, both underground and surface. In regular use in many collieries in U.K., Western Germany and U.S.

Siskol Machines Ltd.

Underground steel saw unit. 7 years on market. £500 f.o.b. British ports.

Stein Atkinson Vickers Hydraulics Ltd.

Representative display of British-made Vickers-Detroit oil hydraulic pumps, motors, control valves, power assisted steering boosters, actuating cylinders, and complete power units. The undoubted advantages of hydraulic power units and machine control valves are becoming widely recognised and it is confidentially expected that the use of hydraulics in mining operations will increase significantly in the near future.

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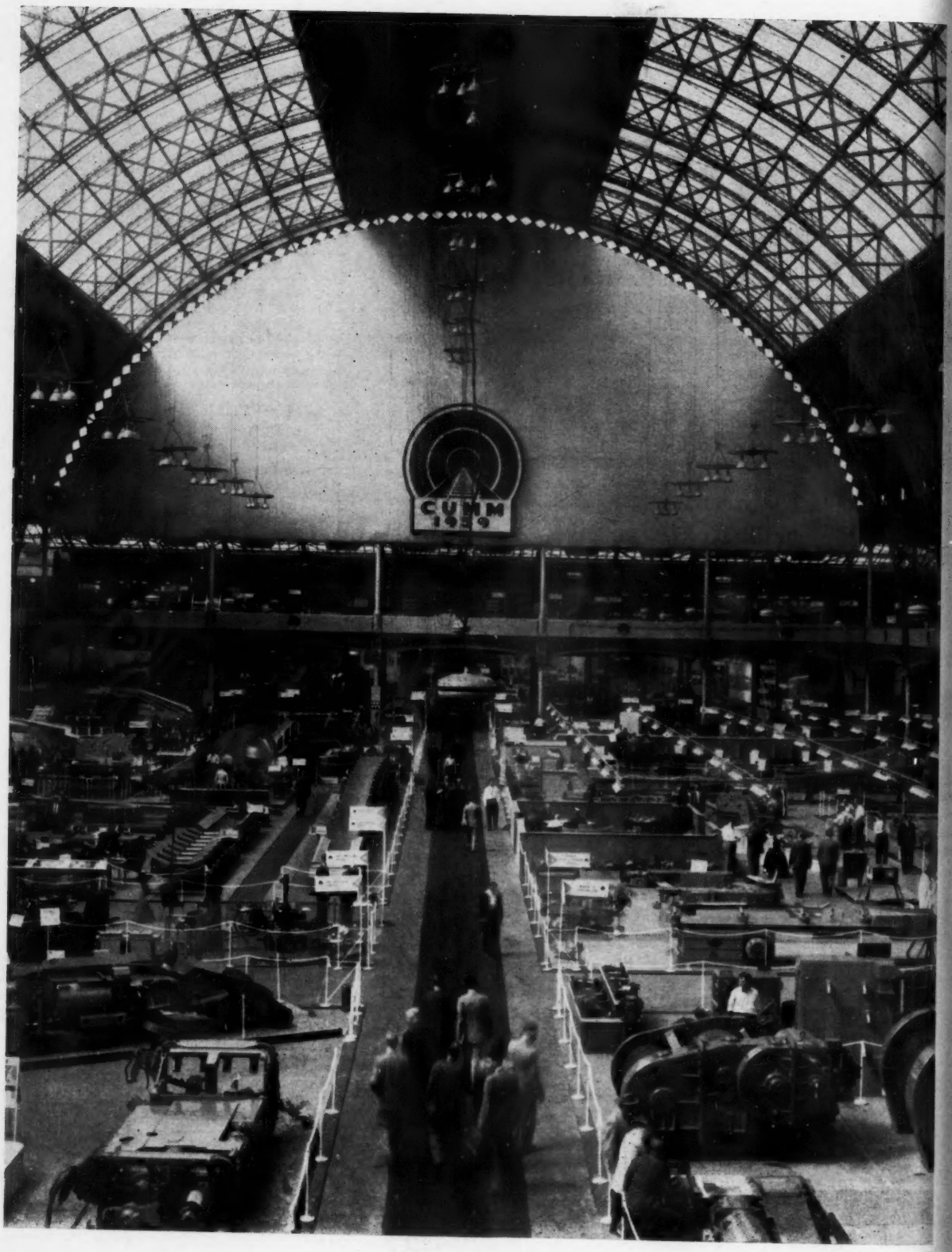

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